

Department of Earth System Science, Stanford University

GRADUATE STUDENT HANDBOOK ACADEMIC YEAR 2017-18

(To be used in conjunction with the
Stanford University Bulletin)

INTRODUCTION

Welcome! As you begin your graduate career here at Stanford, we'd like to introduce you to the nuts and bolts of the degree program, from your first year through Commencement.

This handbook augments the Stanford University Bulletin and other University publications and contains department-specific policies, procedures, and degree requirements.

Stanford Bulletin

<http://bulletin.stanford.edu>

The Stanford Bulletin is the official statement of University policies, procedures, and degree requirements. It is composed of two parts: Explore Degrees lists University requirements and regulations, degree requirements, and other information pertinent to acquiring a degree at Stanford. Explore Courses is the Bulletin's online course catalog and schedule of classes.

Graduate Academic Policies and Procedures (GAP)

<http://gap.stanford.edu>

The Graduate Academic Policies and Procedures handbook (the GAP handbook) is a compilation of university resources and other information related to the academic progress of Stanford graduate students – from their application and admission, to the conferral of degrees and retention of records. The information contained in the GAP is drawn from several sources, including: the Stanford Bulletin, various forms provided by the Office of the Registrar, and the record of actions taken by the Academic Senate and its Committee on Graduate Studies.

The Ph.D. is conferred upon candidates who have demonstrated substantial scholarship and the ability to conduct independent research and analysis in Earth System Science. Through completion of advanced course work and rigorous skills training, the doctoral program prepares students to make original contributions to the knowledge of Earth System Science and to interpret and present the results of such research.

It is the responsibility of each student to become familiarized with the location and content of University policies and procedures that pertain to their degree program.

We wish you success in your academic life here at Stanford!

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DIRECTORY of FACULTY, STAFF and STUDENTS

DIRECTORIES

There are two main places where students need to maintain their contact information, each for a different audience:

- Stanford Who: <http://stanfordwho.stanford.edu> is the University's online directory. Students can restrict whether this information is seen by the public or by Stanford affiliates only.
- Earth System Science student profile: The School of Earth, Energy and Environmental Sciences is part of the Community Academic Profiles (CAP) system. CAP profiles are visible on both the SEES and ESS websites. All profiles can be updated at <http://profiles.stanford.edu>. NOTE: All student photos and basic bios will be set to public by ESS; students wishing to adjust these visibility settings can do so directly in CAP.

EARTH SYSTEM SCIENCE FACULTY

Chair: Rob Jackson

Professors: Kevin Arrigo, C. Page Chamberlain, Noah Diffenbaugh³, Robert Dunbar, Scott Fendorf, Christopher Field^{1,2,3}, Steven Gorelick, Robert Jackson^{2,3}, Eric Lambin³, Pamela Matson (Dean), Rosamond Naylor^{3,4}
Associate Professors: Karen Casciotti, Christopher Francis, James Holland Jones, David Lobell^{3,4}, Leif Thomas
Assistant Professors: Marshall Burke⁴, Ann Dekas, Alexandra Konings, Kate Maher, Paula Welander

Courtesy Professors: Gregory Asner, Ken Caldeira, Anna Michalak, Peter Vitousek

Visiting Professors: Anders Ahlstrom, Joel Blum, Donald DePaolo, Anne Egger, Matt Fantle, Maureen Feineman, Moritz Lehmann, Jonathan Sharp, Fran Ulmer, Tan Minh Vu

¹ Joint appointment with Biology, ² Joint appointment with the Precourt Institute for Energy, ³ Joint appointment with the Woods Institute for the Environment, ⁴ Joint appointment with the Freeman Spogli Institute for International Studies

ESS ADMINISTRATIVE STAFF

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ENROLLMENT AND COURSE REQUIREMENTS

M.S. degrees require a minimum of 45 units of residency; doctoral degrees require a minimum of 135 units. Below is the required curriculum.

Seminars

- ESS 301: Topics in Earth System Science (Autumn – Spring, first year)

Core Courses

Students are required to take three 2-unit courses during the first year:

- ESS 305: Climate Change: An Earth Systems Perspective (Autumn)
- ESS 306: From Freshwater to Oceans to Land Systems (Winter)
- ESS 307: Research Proposal Development and Delivery (Winter in 17-18)

Distribution Requirements

Students must take one class from each of the following three areas within the first or, as needed, second year. Quarters listed below are subject to change, make sure to verify in [Explore Courses](#):

Area A: Analysis of the Earth System

- ESS 211 (not taught in 17-18): Fundamentals of Modeling (Lobell), 3-5 units
- ESS 214 (SPR): Introduction to Geostatistics and Modeling of Spatial Uncertainty (Michalak), 3-4 units
- STATS 160 (AUT, WIN, SPR): Intro to Statistical Methods: Precalculus, 5 units
- CME 106 (WIN): Intro to Probability and Statistics for Engineers (Khayms), 4 units
- STATS 207 (SPR): Intro to Time Series Analysis (Donoho), 3 units

Area B: Measurement of the Earth System

- ESS 210 (SPR): Techniques in Environmental Microbiology (Dekas), 4 units
- ESS 212 (SPR): Measurements in Earth Systems (Casciotti), 3-4 units
- ESS 224 (SPR): Remote Sensing of Hydrology (Konings), 3 units
- ESS 241 (WIN): Remote Sensing of the Oceans (Arrigo), 3-4 units
- ESS 243 (SPR): Molecular Geomicrobiology Laboratory (Welanders), 4 units
- ESS 262 (WIN): Remote Sensing of Land (Lyons), 4 units

Area C: Earth System Processes, Models, and Human-Environmental Interactions

- ESS 220 (AUT): Physical Hydrogeology (Gorelick), 4 units
- ESS 221 (WIN): Contaminant Hydrogeology (Gorelick, Maher), 4 units
- ESS 223 (AUT): Ecophysiology and Land Surface Processes (Konings, Berry), 4 units
- ESS 232 (not given 17.18): Evolution of Earth Systems (Chamberlain), 4 units
- ESS 244 (SPR): Marine Ecosystem Modeling (Arrigo), 3 units
- ESS 246A (WIN): The Atmospheric Circulation (Thomas), 3 units
- ESS 246B (SPR): The Ocean Circulation (Thomas), 3 units
- ESS 258 (WIN): Geomicrobiology, (Francis), 3 units
- ESS 270 (SPR): Analyzing Land Use in a Globalized World (Lambin), 3 units

Submitting a Study List

Graduate students are required to register in 10 units for all terms of each academic year (Autumn, Winter, and Spring quarters) from the admission term until conferral of the degree. The only exception to this requirement is if an official leave of absence is granted.

Failure to register for a term during the academic year without taking a leave of absence results in denial of further registration until reinstatement to the degree program is granted and the reinstatement fee paid. Registration in Summer Quarter is not required and does not substitute for registration during the academic year (with the exception of international students). Please consult with your advisor regarding summer course enrollment. Students are responsible for making sure all university deadlines are met. An academic calendar can be found on the Office of the University Registrar's website.

In addition, graduate students are required to be registered:

- In each term during which any official department or university requirement is fulfilled, including qualifying exams and the University oral exam.
- In any term during which a University dissertation/thesis is submitted or at the end of which a graduate degree is conferred.
- Normally, in any term in which the student receives financial support from the University.
- In any term for which the student needs to use University facilities such as on-campus housing, Vaden Health Service, etc.
- If they are international students, in any term of the academic year for which they have non-immigrant status (e.g., a J-1 or F-1 visa).
- Individual students may find themselves also subject to the registration requirements of other agencies (such as external funding sources like the Veterans' Administration).

Terminal Graduate Registration (TGR)

TGR students register at a special tuition rate, which is substantially lower than the standard tuition rate. Each quarter, all TGR students must submit a study list to enroll in ESS 801 (MS) or ESS 802 (PhD) for zero units, in the appropriate section for their adviser.

TGR Eligibility: Doctoral students who have completed 135 units, been admitted to candidacy, completed of all required courses and degree requirements other than the University oral exam and dissertation, accrued the applicable unit and/or residency requirement, and submitted a Doctoral Dissertation Reading Committee form must request Terminal Graduate Registration status to complete their dissertations.

Master's students who have completed 45 units, completed of all required courses and the residency requirement (including a final master's writing project if required) must request Terminal Graduate Registration status.

Request for Graduate Tuition Adjustment: Graduate students who need only a few remaining units to complete degree requirements or to qualify for TGR status may register for one quarter on a unit basis (3 to 7 units) to cover the deficiency. This status may be used only once during a degree program and is available to all graduate students. Apply using the "Request for Graduate Tuition Adjustment" form:

<https://stanford.app.box.com/v/part-time-enrol-grad-stu>

Transferring Units

After one quarter of enrollment, Ph.D. students may apply for credit for graduate work done at another institution if that work meets the established eligibility criteria. Stanford Bulletin shows the eligibility criteria and maximum number of transfer quarters that can be accepted towards Stanford's unit or residency requirement for each degree or degree combination. The Application for Graduate Residency Credit can be found at: <https://stanford.app.box.com/v/grad-res-credit>

Students enrolled at Stanford who are going to study elsewhere during their degree program should, before their departure, obtain prior approval of any transfer residency sought.

Individual Study Courses

Individual Study includes Independent Study, Directed Reading, Research, Thesis and TGR courses. Students must have permission from their advisor before registering for Individual Study courses (these are ESS 400, ESS 801, and ESS 802). After permission is granted, use this link to register with the correct instructor: <https://axess.sahr.stanford.edu>

Grades

Students in the department must take required courses for a letter grade and are expected to earn a grade of 'B' or better in each course. In addition, students must complete a minimum of four letter grade courses of at least 3 units each from four different faculty members on the Academic Council in the University. Students in the department are required to maintain a GPA of 3.0 in all courses required for the degree. Students with a GPA of less than 3.0 are not making satisfactory progress and may be at risk for dismissal from the program.

Students are responsible for making sure grades are reported. If asterisks (*), incomplete grades (I), GNR, or No Credits (NC) appear on the end quarter grade report, students should check with their instructor immediately. Please contact instructors in a timely manner to ensure that grades are submitted.

Incomplete Work/GNR

Students are responsible for checking their final grades at the end of each quarter. If incomplete grades (I), grade not recorded (GNR), or No Credit (NC) appear on the end quarter grade report, students should immediately check with their instructor. The Student Services Manager can assist students and instructors in clearing missing and incomplete grades by forwarding the appropriate instructions and/or university forms. Should the instructor agree to an "incomplete", a deadline by which outstanding work is to be submitted must be confirmed between the student and the instructor. Per university policy "I" grades must be changed to a permanent notation or grade within a maximum of one year. If an incomplete grade is not cleared at the end of one year, it is changed automatically by the Registrar's Office to a 'NP' (not passed) or 'NC' (no credit) as appropriate for the grading method of the course.

Leave of Absence

Personal circumstances may arise that necessitate that the student temporarily withdraws from continuous academic registration. In order to do so, the student must request a formal Leave of Absence from the department. The Leave of Absence form can be found here: <https://studentaffairs.stanford.edu/registrar/students/leave>. The Department Chair and the advisor must approve the leave. Leaves of absence are generally granted for a maximum of one calendar year. In unusual circumstances an extension of one additional year may be approved for students who have not completed all residency requirements, including admission to candidacy.

International Students on a visa must also have the Leave of Absence Request approved by the Bechtel International Center. Additional policy regarding Leave of Absence may be found here.

The Office of the Registrar discontinues students who fail to be either enrolled by the final study list deadline or approved for a leave of absence by the start of a term. They are required to apply for reinstatement through the Graduate Admissions office before they can return to the same degree program. The decision to approve or deny reinstatement is made by the student's department or program. Reinstatement decisions are made at the discretion of the department of the program.

Absences Due to Thesis-Related Field/Lab Work

If your absence makes it impossible for you to fulfill a 10 hour/week (25%) teaching assistantship, you may still receive the 25% time fellowship portion of your department commitment. It is common under these circumstances for a faculty member to provide a 25% RA in lieu of a TA when a student needs to conduct research either on or away from campus.

PROGRESS TO DEGREE TIMELINE

ESS PHD SAMPLE TIMELINE TO DEGREE

1 st Year	Quarter	Units	Sample Course Schedule	Milestones	Paperwork Due
	AUT	2 1 6	-ESS 305 (Core) -ESS 301 -ESS Dist Req A, B and/or C		
	WTR	4 1 5	-ESS 306 (Core) and ESS 307 (Core) -ESS 301 -ESS Dist Req A, B and/or C		- Application for Graduate Residency Credit (WTR - if applicable- transfer up to 45 units)
	SPR	2 1 7	-ESS 307 (Core) -ESS 301 -ESS Dist Req A, B and/or C	-Annual review due by end of Spring (for 1 st year)	
	SMR	varies	-Must enroll in a minimum of 1-3 units in summer to receive funding		
2 nd Year	Quarter	Units	Sample Course Schedule	Milestones	Paperwork Due
	AUT, WTR, SPR, SMR	10/qtr SMR varies	-Consult w/ advisor, may complete distribution in 2nd year (as needed) -Must enroll in a minimum of 1-3 units in summer to receive funding	-Candidacy/Qual Exam -Pass Candidacy by May 1st	-Application to Candidacy -Qualifying Exam -Reading Committee Form
3 rd Year	Quarter	Units	Sample Course Schedule	Milestones	Paperwork Due
	AUT, WTR, SPR, SMR	10/qtr SMR varies	-Consult w/ advisor, may complete distribution in 2nd year (as needed) -Must enroll in a minimum of 1-3 units in summer to receive funding		-Doctoral Dissertation Reading Committee form (AUT QTR) -Post-Candidacy Annual Review Form (WTR QTR)
4 th - grad	Quarter	Units	Sample Course Schedule	Milestones	Paperwork Due
	AUT, WTR, SPR, SMR	10/qtr SMR varies -OR- TGR	-Consult w/ advisor, may complete distribution in 2nd year (as needed) -Must enroll in a minimum of 1-3 units in summer to receive funding -OR- -ESS 802 (TGR)	-When eligible "Apply to Graduate" in Axess,	-Dissertation research & writing -TGR form at completion of 135 units -Post-Candidacy Annual Review Form (WTR QTR) -University Oral Exam Form (when defending) -Submit Doctoral Dissertation
5 th -	ALL	10 or TGR	Same as above.	Same as above.	
<p>Note:</p> <ul style="list-style-type: none"> • Please make sure to consult with advisor regarding coursework requirements and needs. • Doctoral degrees require a minimum of 135 units. • Must complete a minimum of four – 3 unit "letter grade" courses taught by four different faculty members on the Stanford University Academic Council. • Must serve as a teaching assistant in at least two quarters during their graduate career. 					

ESS M.S. SAMPLE TIMELINE TO DEGREE

1 st Year	Quarter	Units	Sample Course Schedule	Milestones	Paperwork Due
-Follow the same schedule as year 1 in "ESS PHD SAMPLE TIMELINE TO DEGREE" above.					
2 nd Year	Quarter	Units	Sample Course Schedule	Milestones	Paperwork Due
-Follow the same schedule as year 2 in "ESS PHD SAMPLE TIMELINE TO DEGREE" above.					
<p>Note:</p> <ul style="list-style-type: none"> • Must complete a minimum of 45 units. • Half of the courses used to satisfy the 45-unit requirement must be intended primarily for graduate students, usually at the 200-level or above. • No more than 15 units of thesis research may be used to satisfy the 45-unit requirement. • May be required to make up background deficiencies in addition to these basic requirements. • Teaching assistantship required in at least one quarter during graduate career. 					

GENERAL PROGRAM REQUIREMENTS

Advising

The advisor is an Academic Council (AC) member who is determined at the time of admittance. Faculty advisors are to: serve as intellectual and professional mentors to their graduate students, provide knowledgeable support concerning the academic and non-academic policies that pertain to graduate students, help to prepare students to be competitive for employment, and maintain a high level of professionalism in the relationship. It occasionally happens that a student desires to change research advisor. Whatever the reasons, it is important that potential problems be recognized by the student and discussed with the advisor and the GC early-on. A change of advisor is not a trivial event. It commonly involves changes in research focus or even specialty, the likelihood of additional course work, slowdowns in research progress, delays in candidacy, and difficulties with financial aid. Within the first year of graduate studies, a shift of advisor can be handled with relative ease but with every succeeding year, the change becomes more difficult. Students are strongly urged to resolve any difficulties with their advisor in the first year.

Please visit [HERE](#) to find: Guidelines for Good Practices in Graduate Student-Faculty Advisor Relationships

Teaching Assistantship (TA)

As a program requirement, advanced degree candidates in ESS will complete TA-appointed (25%) quarters at a minimum of: 2 for PhD students and 1 for Master's students, to be completed over the course of study. In addition, additional TA quarters may be considered and/or required in consultation with the research advisor, depending on academic goals, funding availability, or the requirements of individual doctoral programs.

Please consult with your advisor on any potential TA assignments if you are asked directly by another faculty member. Effort will be made to balance the workloads of the graduate students to support satisfactory academic progress, including consideration of the relative workload of different TA assignments. ESS students have first priority to apply for any new ESS TA assignment that is made available. If faculty members or graduate students have any special requests regarding TA-ships, they should make them known to the Student Services Manager.

ESS graduate students are required to complete the University-mandated TA training. In addition, students must confirm their appointment with the Student Services Manager before the end of the first week of classes so that an evaluation can be generated at the end of the Quarter, their name can be listed on the Schedule of Classes, and the source of funding can be accurately recorded.

Annual Review of Progress to Degree

Each year, the department evaluates students to assess progress to degree, identify areas of strength, provide helpful resources, and note potential issues or areas of concern. This Annual Review includes a record of accomplishments presented by the student, written evaluations by the faculty advisor of the student's progress, and committee feedback on the academic and research progress of the student. The student should have no "I" grades in core courses, must maintain at least a 3.0 grade-point average, and show evidence of productive and sustained research progress, with no conflict of interest or conflict of commitment. Possible outcomes of the Annual Review include: (1) continuation of the student in good standing, and (2) placing the student on probation, with specific written guidelines of the period of probation and the necessary steps for reinstatement to good standing.

Annual Reviews are required for all PhD students, including first-year PhD students. In the first year, the Annual Review is conducted between the student and the PhD advisor(s) (prior to forming a doctoral committee). After the first year, the Annual Review must be conducted between the student and their doctoral committee. In all years, the written Annual Review form must be completed and signed by both the student and the advisor.

In the year in which students are undertaking their Candidacy Exam ("Research Qualifying Exam"), that exam will serve as the Annual Review. In addition, any student who has scheduled the Dissertation Defense and

petitioned to graduate in Axess may elect not to hold an additional Annual Review meeting. Annual Reviews that are NOT the Qualifying Exam or Dissertation Defense should take place in the Autumn or Winter Quarter (with the exception of first-year students, who may hold their Annual Review meeting with their advisor(s) in the Spring Quarter).

Annual Review Forms: [HERE](#)

Academic Progress

The principal condition for continued registration is satisfactory academic progress. The academic progress requirements for graduate students include timely completion of departmental and program requirements, such as admission to candidacy, completion of qualifying exams, etc. Students who are not making satisfactory progress are subject to dismissal. Progress is assessed differently for non-TGR and TGR students:

For Non-TGR Students, the minimum (but not exclusive) progress requirement, regardless of the degree being pursued, is based on a comparison of the units expected and the units actually completed:

- Students registered for 10 units must pass at least 6 units per quarter. Students must maintain at least a 3.0 grade point average.
- For TGR Students each advanced graduate student who has been granted TGR status must enroll each term in the ESS TGR course (801 for M.S. or 802 for Ph.D.) in the section appropriate for his/her advisor.
- The student meets the minimum progress requirement by receiving an "S" grade in the TGR course. The "S" signifies that the student is making satisfactory progress. An "N" grade indicates unsatisfactory progress. The first "N" grade constitutes a warning. A second consecutive "N" grade will normally cause a hold on further registration until a written plan for completion of degree requirements has been approved by ESS. Subsequent "N" grades are grounds for dismissal from the program.

Problems that are likely to result in an assessment of unsatisfactory progress include (but are not limited to):

- First-year graduate students who have not settled on a thesis topic by the time of the Spring quarter
- Ph.D. students in their sixth quarter who have not yet advanced to candidacy or have not yet scheduled their Qualifying Exam
- Low grades in courses essential to the student's research program
- Excessive number of incomplete grades
- Insufficient number of formal lecture courses
- Inadequate progress in research

Graduate students are advised to consult the Graduate Academic Policies and Procedures (GAP) handbook (<http://gap.stanford.edu/>) for additional details about requirements and policies for remaining in good standing.

Probation: The department expects students to progress toward completion of the degree without major difficulties. Academic holds may be placed on registration privileges of students who continue in delinquent status. If a probationary period is recommended, the student will be clearly advised of the areas needing improvement and a deadline for such improvement will be established. Failure to comply with the conditions of the probationary period may result in termination from the program, in accordance with University policies and procedures.

Dismissal: For information on the University policies for dismissal, please refer to "[Dismissal for Academic Reasons \(GAP 5.6\)](#)."

CANDIDACY FOR THE PH.D. DEGREE

Timing

University policy requires completion of the department qualifying procedures and application for candidacy by the end of the second year in the Ph.D. program. Therefore, it is strongly advised that the qualifying exam be taken during the 5th (non-summer) quarter so that the student may retake the exam in the case of inadequate performance and still advance to candidacy by the end of the 6th (non-summer) quarter.

University policy on candidacy: <http://gap.stanford.edu/4-6.html> & <http://exploreddegrees.stanford.edu/graduatedegrees/#doctoraltext>

Students must present a draft proposal to their advisor in a timely fashion, and take account of the comments and require revisions before preparing a final draft. The student shall submit a copy of the final draft of the research proposal to each member of the Examining Committee at least two weeks before the scheduled date of the examination.

Forms

Please submit the following to the Student Services Manager at the conclusion of your exam:

- Application to Candidacy: <https://stanford.box.com/CandidacyApplication>
- Qualifying Exam: <https://stanford.box.com/ESSqualexamform>
- Reading Committee Form: https://studentaffairs.stanford.edu/sites/default/files/registrar/files/doc_diss_rdg_ctte.pdf

Candidacy Qualifying Exam

Students should, in ample time before the examination, consult the individual members of the Examining Committee to ascertain the subject matter and level of preparedness required for part (3) of the examination.

Examining Committee

The Examining Committee consists of a minimum of 4 members and a maximum of 5 members:

- At least 3 of whom are Academic Council members (AC. i.e. Asst. Prof., Assoc. Prof and Prof., All members of the Tenure Line faculty are members of the Academic Council of the University)
- At least 2 of whom are ESS AC members.
- The Chair of the Examining Committee must be on the Academic Council.
- Cannot be the Dissertation Research Advisor.

Research Proposal

The qualifying exam is an oral exam based on the candidate's written research proposal. The exam is a test of the student's ability to recognize, evaluate, and plan a significant research project and his/her mastery of fields essential to the completion of research. The research proposal must provide a concise review of the background literature, and must discuss the proposed problem, its importance and the methods to be applied to its examination. The methods should be made clear. The proposal shall contain a timetable and, if appropriate, the student shall discuss such matters as funding, field logistics, laboratory scheduling and availability of equipment. The proposal must be well thought out, carefully written and edited, and finished with appropriate references and illustrations. It shall not exceed 15 double-spaced pages in length, exclusive of figures and bibliography.

Oral Exam Format

The Qualifying Exam shall be oral and consists of three parts:

- 1) A presentation of the proposed research (no more than 30 minutes duration);
- 2) An examination of the candidate on the merits of the proposal, touching on but not limited to the aspects listed in the proposal; and
- 3) An examination of any subject matter judged by Committee members to be relevant to the student's ability to carry out the proposed research.

It is recognized that, in practice, parts 1- 3 may not be entirely separate and distinct. The entire examination shall last no less than 2 hours and no more than 3 hours; the examination under part (3) shall last at least one hour. No part of examination is public.

Results of Exam

The Examining Committee shall discuss and evaluate the student's performance, and take a written vote. Results may be "pass" (no conditions attached), "inadequate performance," or "fail". Not more than one negative vote will be accepted in a "pass" decision. "Fail" results from 2 or more negative votes and disqualifies the student from continuing in the Ph.D. program. "Inadequate performance" results from the Committee's decision that the student must meet certain criteria deemed necessary by the student's Committee. These criteria could include retaking the exam, completing specific courses, rewriting the proposal, etc. If the student is required to retake the entire exam it must be with the same Examining Committee. The Examining Committee should record on the form reporting the result of the criteria the student must meet. These criteria must be met prior to the beginning of the student's third year in order to be considered in good standing and continue to be eligible for departmental support.

Candidacy Eligibility

Students are expected to complete the department qualifying procedures and apply for candidacy at the beginning of spring quarter of their second year or sixth quarter (whichever comes first). University policy on candidacy: ([GAP 4.6](#)). In the Department of Earth System Science, the faculty's decision on admission to candidacy is grounded in an overall assessment of the student's ability to complete the remaining stages of Ph.D. work at a level of superior quality. Grades in courses constitute only a part of the evidence weighed in making this judgment. The decision to advance to candidacy also rests upon other indicators of the student's ability to produce original research and to conduct analysis and interpretation. Candidacy is valid for five years, unless terminated by the department (for example, for unsatisfactory progress).

Admission is not automatic and is not based solely upon satisfactory completion of the following prerequisites: Students must complete all core course requirements and at least 45 units at the graduate level at Stanford by the end of the quarter before application. Incomplete grades must be cleared thirty days before the candidacy file is submitted to the faculty.

Admission to Candidacy (Documenting Pass)

Passing to candidacy occurs on the date the student (1) "passes" the candidacy exam, or (2) fulfills the criteria set out at the time of an "inadequate performance" on the candidacy exam. The Principal Dissertation Advisor and the Chair of the department will then sign off on the "Application for Candidacy for Doctoral Degree" which the student should have completed prior to their exam. The form can be available at: <http://gap.stanford.edu/4-6.html>

Failure to Pass the Ph.D. Qualifying Exam

A doctoral student in any Earth, Energy and Environmental Sciences department or program who fails the qualifying exam may appeal (within the same quarter as the exam) to the chair of the department or director of the program for a new examination. The chair or director shall seek advice of the graduate committee, executive committee, or committee of the whole, before deciding whether to permit a new exam or to deny the request. The department chair or program director will base his/her decision solely on the examination process itself, i.e., whether the examination was conducted in a fair and equitable manner.

If the request for a second exam is approved, the chair or director will work with the examining committee to arrange for a second examination. In some cases new committee members may be identified with input from the student.

If the request for a second qualifying examination is denied, the student may be dismissed from the doctoral program after careful evaluation of the student's academic record. This decision must be communicated orally and in writing to the student (see University policy regarding dismissal of doctoral students, below.) If appropriate, the student may apply for a terminal M.S. degree (see below) or is entitled to file an academic

grievance following the procedure described below.

Delay of Candidacy Exam

Ph.D. students wishing to delay their candidacy exam must seek written approval from their advisor before submitting a request for delay to the GC. This request must be submitted before the start of the 6th quarter. Under exceptional circumstances, the GC will recommend approval of a delay to the Chair of the department, who has final authority. A maximum delay of one year may be granted. Students who fail to petition for a delay of candidacy before the start of the 6th quarter and who do not schedule a candidacy exam during the 6th quarter will not be allowed to continue in the Ph.D. program.

Expiration/Extension of Candidacy

All requirements for the PhD degree must be completed before candidacy expires. Candidacy is valid for five calendar years, unless terminated by the department (for example, for unsatisfactory progress). The time limit is not automatically extended by a student's leave of absence. Failure to complete the academic requirements, including university, department, or program requirements, within the established time limits may lead to dismissal.

Extensions of Ph.D. Candidacy beyond the 5-year limit are granted for a one-year period. Such extensions require a dissertation progress report a timetable for completion, and written approval by the Advisor and the Department Chair. A second extension may be granted under exceptional circumstances and only in those cases where the Advisor certifies that a complete first draft of the dissertation has been submitted by the student.

Requesting M.S. Degree

This is an optional milestone once admitted to candidacy, 45 units have been completed and the core course requirements for a Master's degree in ESS are met. Here are the steps:

1. Students must receive approval from advisor before submitting the petition.
2. Submit the [Graduate Program Authorization Petition](#) electronically in Axess, directions:
 - a. Log into [Axess](#), and go to Student tab
 - b. In Academics section, click on drop down menu and select "Petitions and Forms."
 - c. Select Petition "Graduate Program Authorization Petition."
 - d. Complete the petition
 - i. Select effective term.
 - ii. Select new academic program. Click the look up icon to identify the program and plan.
 - iii. Do NOT click on box to "discontinue PhD".
 - iv. Save.
 - v. A \$125 petition fee is assessed for submitting the Graduate Program Authorization petition, regardless of outcome.
3. The Student Services Manager will gain approval from the student's advisor before approving electronically.

Petitions are routed to and approved by the department chair. In addition, petitions from international students will be routed to the Bechtel International Center for review. Upon all approvals, the student's record will automatically update with the requested changes. Petitions must be submitted electronically no later than the last day of classes for the quarter in which the change is requested. Petitions after the deadline must be submitted for the subsequent quarter if applicable. A service fee for the handling of the petition will be added automatically to the student's university bill, regardless of outcome.

DISSERTATION

Under the supervision of the research advisory committee, the candidate must prepare a doctoral dissertation that is a contribution to knowledge and is the result of independent research; curriculum must also be developed with the supervision of the committee, which should be designed to provide a rigorous foundation for the research area. The format of the dissertation must meet University guidelines. The student is urged to prepare dissertation chapters that, in scientific content and format, are readily publishable. Please refer to the University Oral Examinations and Committees (GAP 4.7) for Policy and Implementation Guidelines:

<http://gap.stanford.edu/4-7.html>

Certification of Thesis Draft by Dissertation Reading Committee

The student must submit a completed version of the dissertation, including figures, tables, references, and appendices, to the members of the Reading Committee two weeks prior to the proposed filing of the '[University Oral Examination Schedule](#)' form. The Reading Committee is charged to read the draft and certify in writing that it is adequate to serve as a basis for the University Oral Examination. Such written certification is required before a student may schedule a University Oral Examination.

Dissertation Reading Committee

Each student is responsible for forming a Dissertation Reading Committee, which consists of principal advisor and three other readers (who are not required to be the same faculty members who have signed off on the proposal). Normally, three members of the committee are drawn from the ESS department and one from outside the department. These three readers will eventually serve as the Oral Defense Committee.

Committee Members:

The Reading Committee must be approved at least four weeks prior to the intended date of the University Oral Exam. The Chair of the Department approves the membership of the Reading Committee, which consists of three readers: the principal dissertation advisor and two other readers. Normally, all members will be on the Academic Council (AC). On occasion, permission for appointment of one of the three readers who is not on the AC may be approved by the department. At least one member must be from the ESS Department.

Policy pertaining to Dissertation Reading Committees can be found at <http://gap.stanford.edu/4-8>

DISSERTATION DEFENSE (ORAL EXAMINATION)

The defense itself consists mainly of a defense of the dissertation but may range, at the committee's discretion, over a wider field. The student is likely to be required to discuss research methods and findings at some length and to answer all questions and criticisms put forth by members of the examining committee. Changes resulting from the committee's criticism of the manuscript and subsequent examination of the student's research during the defense must be incorporated by the student into the final draft of the dissertation for submission to the department as the final requirement for the granting of the Ph.D.

The candidate must be registered in the quarter in which the Oral Defense is undertaken. The period between the last day of final exams of one term and the day prior to the first day of the following term is considered an extension of the earlier term. Candidacy must also be valid. The University policy on the Oral Examination is available at the Stanford Bulletin.

Apply to Graduate

Once a defense date has been decided students will need to "apply to graduate" in Axxess. To file the application through Axxess: Select "Apply to Graduate" from the drop down menu on the Student Center Academics tab and complete the entire application to graduate process.

Timing

Ph.D. Candidates must submit an abstract of the certified dissertation and the 'University Oral Examination' form four weeks prior to the intended date of the Dissertation Defense. The Certified thesis must be submitted to the University Oral Examining Committee 10 days prior to the date of the University Oral Exam (see below).

Forms

- The Oral Committee form is available at (to be submitted 30 days prior to exam to Student Services Manager):
http://studentaffairs.stanford.edu/sites/default/files/registrar/files/doc_orals.pdf
- Thesis Draft Certification (to be submitted after signed to Student Services Manager):
<https://stanford.box.com/ESSThesisCertification>

Oral Examining Committee

The University Oral Examining Committee is approved by the Department Chair and consists of a minimum of four examiners and a Chair. The Chair must be an Academic Council (AC) member and cannot have a full or joint appointment in the same department as the candidate or his/her advisor. Students should find a Chair who is not closely allied with the student's research area. Normally the examiners will be the three members of the Dissertation Reading Committee plus one addition AC member from the department.

Certification of Thesis Draft by Reading Committee

The student must submit a complete draft of the dissertation, including figures, tables, references, and appendices, to the members of the Reading Committee two weeks prior to the proposed filing of the 'University Oral Examination Schedule' form. The Reading Committee is charged to read the draft and certify in writing to the GC that it is adequate to serve as a basis for the University Oral Examination. Such written certification is required before a student may schedule a University Oral Examination.

Video Conferencing

A member of the committee may participate by video conferencing. The primary advisor, the student, and the out-of-department chairperson must be present and may not participate virtually. If the conferencing technology fails and the examiner cannot participate, the committee may fail to reach its quorum. In this case, the examination must be rescheduled.

Conducting and Voting on the Examination

A portion of the oral examination may take the form of a public seminar, but a period of private questioning by the official examining committee must be included. The examination should be conducted according to the major department's stated practice, although it should not exceed three hours in length. At the conclusion of the examination the candidate should be asked to leave so that the committee can confer in private. At the conclusion of the examination, a vote is taken and the chair tallies the votes of the members.

Reporting the Results

The candidate will be informed shortly after the conclusion of the defense whether or not s/he has passed. The oral examination chair will then submit the signed Oral Exam Form and ballots to the ESS Student Services Manager.

Thesis Submission

University guidelines for the submission of the doctoral dissertation/thesis are described in the Dissertation and Thesis Submission: <https://studentaffairs.stanford.edu/registrar/students/dissertation-thesis>

The deadline for submission of dissertations for degree conferral in each term is specified by the university academic calendar. The final dissertation with all required signatures, as indicated on the University Oral Exam form, must be submitted to the Student Services Center on or before the deadline, if degree conferral is desired. Students are strongly encouraged to submit their dissertation at least two weeks prior to the deadline to insure that all requirements can be met in time for conferral of the degree.

Graduation Quarter

Students who do not submit their thesis in the same quarter they've applied to graduate in Axess will need to take a "graduation quarter". The university requires that you register during the term in which your dissertation is submitted to the Registrar's office. During Graduation quarter you are registered at Stanford and have the rights and privileges of all registered students. There is a registration fee of \$125 for the Graduation quarter; you will also be assessed University health insurance (unless waived) and ASSU fees. For specific details please refer to the Bulletin. The Petition for Graduation Quarter must be submitted to the Student Services Manager prior to the first day of the proposed graduation term. Petition for Graduate Student Graduation Quarter: http://studentaffairs.stanford.edu/sites/default/files/registrar/files/grad_qtr.pdf

FUNDING INFORMATION

Policies Governing Awards of Departmental Support

When admitted, ESS students receive a commitment with two (M.S.) or four (Ph.D.) continuous years of eligibility for Departmental support from the date they enter Stanford as graduate students. This is contingent upon remaining in good academic standing and making satisfactory progress toward their degree goal. Students with their own support (e.g. NSF fellowship, job related fellowship, or government scholarship) may be eligible for Departmental support should their own support be less than, or end prior to the support package offered by the Department. Funding for the remainder of the degree program typically comes from outside funding obtained by the student or faculty advisor (e.g. grants, fellowships). Note that the commitment is for eligibility and not for the support itself. If a student's support is suspended for unsatisfactory progress or if a student takes a leave of absence, the student may forfeit eligibility for that time.

Getting Paid

There are two main ways for students to receive funding: stipend or salary. A stipend is disbursed at the beginning of each quarter as a lump sum and is usually how you will receive funding for a fellowship. A salary is disbursed on a biweekly basis on the 7th and 22nd of each month and is how you will be paid on an assistantship.

Teaching Assistantship (TA)

As a program requirement, advanced degree candidates in ESS will complete TA-appointed (25%) quarters at a minimum of: 2 for PhD students and 1 for Master's students, to be completed over the course of study. Unless a student holds a fellowship, they will be appointed in one of two ways: 1) 25% teaching assistantships in combination with a 25% research assistantship or 2) a full 50% research assistantship. No more than 8 hours of outside employment are permitted to students that are US citizens; foreign students are not allowed any outside employment.

Research Assistantship (RA)

RAs may be funded by grant support obtained by a particular faculty member or by the department. When funding comes from a grant, the duties of an RA are determined by the PI. RAs should communicate directly with the PI regarding expectations, schedules, logistics, and all other aspects of their research work. Similarly, when an RA is funded by the department, it is expected that the student will communicate closely with their advisor on expectations.

All assistantships receive bi-monthly paychecks (every two weeks) for a total of 6 checks per quarter. Paychecks are distributed on the 7th and the 22nd of each month and are subject to taxation. Since the autumn pay period begins on October 1, fall quarter TAs will receive their first check on October 22nd.

Assistantship Payroll Deduction

Students living in university housing may arrange for their housing fees to be deducted from their paychecks for the quarter. This must be done in the Student Services Center before the deadline for paying the University Bill, please visit here: <https://studentaffairs.stanford.edu/sfs/bill/payroll-deduction>.

Fellowships (SGF, NSF, EPA, DOE, etc.)

The graduate fellowship is an award of financial aid, providing a stipend and/or tuition support. No service is expected in return for a fellowship; it is awarded on a merit basis to assist a student in the pursuit of a degree. The fellowship stipend is intended to provide for living expenses such as rent, food, transportation, health insurance, books and supplies. The tuition allowance for your fellowship is usually credited directly to your university bill. Because full fellowships are intended to enable students to work exclusively on their studies, concurrent hourly employment is limited to eight hours per week. Grad student stipends are normally paid once each quarter, at the beginning of the quarter. Fellowship stipend checks are paid quarterly and are mailed to the MAILING ADDRESS in AXESS at the start of each quarter unless you sign up for direct deposit.

Students should check to see that their address is correct and up-to-date.

Direct Deposit

Employees and students who receive payments from Stanford are strongly encouraged to enroll in direct deposit. Students enroll through the Direct Deposit link in Axess, following the instructions provided here: http://web.stanford.edu/group/fms/fingate/staff/payemployee/quick_steps/enroll_direct_deposit.html

Non-Tuition Fees

Students are responsible for paying some or all of the cost of health insurance & the campus health services fee unless you have an NSF Graduate Fellowship (paid by Department) or another type of fellowship with an allowance.

Health Insurance and Subsidy: Graduate students receiving Research or Teaching Assistantship appointment of 25% or more or those with a fellowship paying a non-tuition stipend at or above the minimum salary for a 25% assistantship (CA or RA) will be eligible for a health insurance subsidy. In order to receive the appropriate benefit, the student must be enrolled in Cardinal Care. For more information, see: http://cardinalcare.stanford.edu/graduate_faq.html

To waive the Stanford plan, submit online via the AXESS system (<http://axess.stanford.edu>). Students seeking a waiver must provide the name and policy number of their current insurance carrier. The decision made at the start of each academic year (normally this is Autumn quarter) is binding for the remainder of the academic year. A dental assistance plan is available on a voluntary basis through the Vaden Student Health Service: http://vaden.stanford.edu/insurance/dental_vision_ins.html

International Students and Visa Status

Non-immigrant students and their dependents must maintain an appropriate visa status at all times. An absence from the U.S. of 5 or more months will result in termination of F-1 or J-1 status. If a student remains outside the U.S. for 5 or more months, a new I-20 or DS-2019 is necessary for re-entry. For further information contact the Bechtel International Center.

The F-1 (student) visa does not permit employment beyond 20 hours per week on campus, so international students may not be employed for any additional hours beyond a 50% assistantship. This limit on additional hours does not apply to the period between the last day of exams of a quarter and the first day of classes the following quarter, as published in the academic calendar.

English screening is required for all international students doing a teaching or course assistantship, visit [English for Foreign Students website](#).

Taxes

All students on financial aid (fellowships, TAs, RAs, work-study) are liable for taxes on the award. Students studying on a visa will find that their taxes are automatically deducted from their fellowship checks. Stanford does not withhold taxes from fellowship stipends for U.S. citizens and permanent residents, and students are responsible for making any estimated tax payment. Taxes are withheld, however, from all payroll checks (assistantships and additional work hours). Students receiving bi-monthly payroll checks must file a W-4 tax form and an I-9 form at the beginning of the first quarter of such payment. Students on payroll will receive a W-2 form after the end of the calendar year to submit with the federal and state tax forms. Please refer to this website for detailed information regarding taxes.

Stanford University cannot give tax advice; however, the following resources may help answer general questions. You are advised to seek a professional advisor with specific questions.

The Graduate Student Council (GSC) can direct you to many relevant sources.

The Payroll Department can answer questions about pay you received. Answers to frequently asked questions are available here.

International Students: Taxes will automatically be deducted from your fellowship stipends and salary checks, so be prepared. Before you can receive your paychecks you must file the FAFSA, I-9, English screening approval for foreign students, along with federal and state tax forms. You can file for a tax refund with the IRS in April.

The Bechtel International Center provides many resources for international students.

OUTSIDE FUNDING

Non-Departmental Funding

Graduate students may be employed and paid for work unrelated to the student's academic and professional training. Such employment is not considered an assistantship appointment and it generates no tuition allowance. Hourly employment is processed through Payroll. U.S. students appointed to a 50% assistantship, or holding a full fellowship, are limited to an additional eight hours of hourly employment per week.

The F-1 (student) visa does not permit employment beyond 20 hours per week on campus, so international students may not be employed for any additional hours beyond a 50% assistantship. This limit on additional hours does not apply to the period between the last day of exams of a quarter and the first day of classes the following quarter, as published in the academic calendar.

Student Resources @ Stanford University

Student Services Center

Located at the Tresidder Memorial Union, 2nd Floor, this Center represents University Offices such as the Office of the University Registrar, Student Financial Services, Financial Aid, and Student ID Card Services.
<http://www.stanford.edu/group/student-services-center/>

Graduate Student Advisory Committee (GSAC)

GSAC is a school-wide body linking graduate students, the Dean's Office, and department administration regarding graduate student issues: <http://pangea.stanford.edu/GSAC/>

Office of Vice Provost for Graduate Education

450 Serra Mall, Building 310, First Floor Stanford, CA 94305-2102. Phone: (650) 736-0775 Fax: (650) 723-7237
<http://vpge.stanford.edu/>

Libraries

Branner Earth Sciences Library (Mitchell Building, 2nd floor) provides tours to help you get started. Other libraries: Engineering Library (Terman Building, 2nd floor) and Green Library: <http://library.stanford.edu/>

Bechtel International Center

The Center provides services for international students, including assistance with social security numbers, tax questions and visa issues. Workshops and events are hosted throughout the year.

<http://www.stanford.edu/dept/icenter/>

Off-Campus Housing Information

Shared housing is the most economical option. Consider looking beyond Palo Alto and Menlo Park, such as, Mountain View, Sunnyvale and Redwood City.

- Community Housing Services: <http://www.stanford.edu/dept/hds/chs/>
- The San Jose Mercury News: <http://www.mercurynews.com/mld/mercurynews/>
- Palo Alto Weekly: <http://www.paloaltoonline.com/>
- Craigslist: <http://www.craigslist.org/>

Parking and Transportation

Parking permits, maps and schedules are available at Parking and Transportation Services. Inquire about the Clean Air Credit Program and other alternative transportation.

<http://www-facilities.stanford.edu/transportation/>

Biking

Bicycles must be licensed through Parking and Transportation Services or any fire station. Bikes are permitted on CalTrain and other types of public transportation. Bike shops are located on and off campus.

Marguerite: Stanford's free shuttle system:

<http://transportation.stanford.edu/marguerite/MargueriteShuttle.shtml>

Vaden Health Services

Most services are free of charge to registered students year-round. Spouses and domestic partners are permitted to use most services, however, charges will apply: <http://vaden.stanford.edu/>

Office of Accessible Education

Students who may need an academic accommodation based on the impact of a disability must initiate the request with the Student Disability Resource Center (SDRC) located within the Office of Accessible Education (OAE). SDRC staff will evaluate the request with required documentation, recommend reasonable accommodations, and prepare an Accommodation Letter for faculty dated in the current quarter in which the request is being made. Students should contact the SDRC as soon as possible since timely notice is needed to coordinate accommodations. The OAE is located at 563 Salvatierra Walk (phone: 723-1066, 723-1067 TTY).

Child Care

The Office for Campus Relations is an excellent resource for childcare and other family related issues.

<http://www.stanford.edu/dept/ocr/worklife/>