

HUMAN BIOLOGY

Courses offered by the Program in Human Biology are listed under the subject code HUMBIO on the Stanford Bulletin's ExploreCourses web site.

The program offers a Bachelor of Arts in Human Biology, as well as a minor and an honors program.

Mission of the Undergraduate Program in Human Biology

The mission of the undergraduate program in Human Biology is to provide students with an interdisciplinary approach to understanding human beings from biological, behavioral, social, and cultural perspectives. Courses in the major allow students to see connections and parallels with other fields as they learn to formulate and evaluate health, environmental, and other public policy issues that influence human welfare. The program prepares majors to pursue advanced training in professional or graduate programs.

To achieve these goals, all students complete a 30-unit core sequence, normally in the sophomore year, which provides the foundation for the major. Also during the sophomore year, students consult with student advisers to choose a faculty adviser and complete the declaration process. Together they plan a road map of course work designed to help each student focus on an area of interest within Human Biology. Early planning and subsequent refining of an individualized course of study, in consultation with student and faculty advisers, is a strength and requirement of the program. The curriculum draws on faculty from across the University. To complete a B.A. in Human Biology, students must take courses from within the program and from other University departments. Most Human Biology majors go on to advanced training in professional schools, or graduate programs in the behavioral, natural, and social sciences, including coterminal master's degree programs in other University departments. Additional information about the major may be obtained from the program's offices or at the Program in Human Biology (<https://humanbiology.stanford.edu>) web site.

Learning Outcomes (Undergraduate)

The program expects its undergraduate majors to be able to demonstrate the following learning outcomes. These learning outcomes are used in evaluating students and the Program in Human Biology. Students are expected to demonstrate:

1. ability to acquire and synthesize scientific information from a variety of sources.
2. ability to apply analytical tools to support a conclusion, address original hypotheses, and evaluate policy.
3. ability to interpret knowledge in meaningful and appropriate ways as they draw conclusions about the significance of their findings.
4. ability to communicate their scientific ideas clearly and persuasively.

Student Advisers

Human Biology has an advising program comprising faculty and student advisers. Before declaring Human Biology as the undergraduate major, each student must meet with one of six student advisers who assist in developing a coherent study plan based on an individualized area of concentration, and the selection of foundation, concentration, and upper-division courses. The student advisers also assist students in selecting an appropriate faculty adviser and a suitable internship for their area of concentration and career goals. Student advisers offer drop-in services during scheduled office hours every weekday and some evenings. The student advisers also sponsor events including the Internship Faire, Beyond HumBio, and declaration workshops. To maintain high standards of advising that respond to the needs of individual students, student advisers meet weekly with the program's faculty advising chairs and the

student services coordinator to review the program's policies and specific student inquiries and petitions concerning the program.

Storey House

Storey House, 544 Lasuen Mall, is an undergraduate resident theme house for Human Biology, devoted to developing an intellectual community among Human Biology majors at Stanford, and allowing faculty and students to become acquainted and share their Human Biology interests and research. Its goals are to foster intellectual discussion in the residential lives of the students living in Storey House, mentoring relationships between upperclassmen and core students in the house, and stimulating events for all Human Biology majors facilitated by academic theme associates. Assignment is made through the regular undergraduate housing draw.

Bachelor of Arts in Human Biology Declaring the Major

A prospective major must consult with the student and faculty advisers to obtain detailed information about the program and guidance in the development of an individual course of study.

At the time the major is declared, the student must submit a written statement (3-5 pages) of academic and long-term goals and the proposed list of courses satisfying the requirements for the major. The proposal is then reviewed by the student advisers who help identify an appropriate faculty adviser.

It is important to declare early in the sophomore year, once a student in good academic standing has passed two of six courses in the Core. The University requires students to declare a major by the end of Spring Quarter of the sophomore year. Under special circumstances students may declare as late as Autumn Quarter of the junior year. Petitions to declare late require additional documentation and are less likely to be approved.

Students who plan to pursue graduate work should be aware of the admission requirements of the schools to which they intend to apply. Early planning is advisable to guarantee completion of major and graduate school requirements.

Degree Requirements

The B.A. in Human Biology (HUMBIO) requires a minimum of 87 units in the major divided among four levels of courses:

1. Fundamental Program: at least 38 units, to include
 - a. Human Biology Core (30 units); see "Human Biology Core" below for more information. The Human Biology Core refers to:

| | | |
|-----------|--|---|
| HUMBIO 2A | Genetics, Evolution, and Ecology | 5 |
| HUMBIO 2B | Culture, Evolution, and Society | 5 |
| HUMBIO 3A | Cell and Developmental Biology | 5 |
| HUMBIO 3B | Behavior, Health, and Development | 5 |
| HUMBIO 4A | The Human Organism | 5 |
| HUMBIO 4B | Environmental and Health Policy Analysis | 5 |
 - b. Statistics (3-5 units). The core and statistics courses must be taken for a letter grade by majors. The minimum grade requirement is "C-". (*Note:* Students who are not declared before Monday, September 21, 2015, may not use STATS 60 to fulfill the statistics requirement.) Statistics may be chosen from courses such as:

| | | |
|---------|---|-----|
| BIO 141 | Biostatistics | 3-5 |
| CS 109 | Introduction to Probability for Computer Scientists | 3-5 |

Units

Units

| | | |
|------------|--|-----|
| ECON 102A | Introduction to Statistical Methods (Postcalculus) for Social Scientists | 5 |
| EDUC 200C | Introduction to Statistical Methods in Education | 3-4 |
| HUMBIO 85A | Essential Statistics for Human Biology | 4 |
| HUMBIO 88 | Introduction to Statistics for the Health Sciences | 4 |
| HUMBIO 89 | Statistics in the Health Sciences | 3 |
| SOC 181B | Sociological Methods: Statistics | 5 |

- c. Internship: HUMBIO 197 Human Biology Internship, 4 units, a mentored non-classroom project, is graded satisfactory/no credit only.
2. Foundation Courses: 20-unit minimum. Total units vary, depending on the focus of study chosen by the student for the area of concentration. They may include introductory-level courses from across the University and lab courses. The minimum grade requirement for foundation courses is 'C-.'
3. Area of Concentration: a minimum of five courses totaling at least 20 units. This in-depth area of study enables the student to focus on educational and post-baccalaureate goals. Courses are non-introductory, theory-based, and are usually numbered over 100. Three or more departments must be represented in the concentration. Each course must be taken for a minimum of 3 units. The area of concentration is individually designed by the student in consultation with the student advisers and faculty adviser. Final approval of the concentration rests with the student advisers and faculty adviser. All area of concentration courses must be taken for a letter grade. The minimum grade requirement for area of concentration courses is 'C-'. The area of concentration generally has an emphasis in one, and sometimes more than one, of the following eight areas:

Area 1: Environment and Environmental Policy

- Environment
- Environmental Policy
- Culture/Demography/Human Ecology

Area 2: Health and Health Policy

- Health Policy
- Public Health
- International Health

Area 3: Human Performance

Area 4: Human Development

- Biological Development
- Psychological Development
- Education

Area 5: Biomedical Science

- Genetics
- Molecular Biology
- Human Physiology
- Infectious Diseases

Area 6: Brain and Behavior

Area 7: Ethics and Medical Humanities

Area 8: Evolution

A non-exclusive list of possible courses for each emphasis is available at the student advisers' office or at the Area of Concentration Course List (<https://humbio.stanford.edu/courses/aoc>) web site.

4. Upper-Division Courses: students must take three Human Biology upper-division courses numbered 100 to 189. These courses should be used to explore subjects outside the area of concentration. One upper-division course may be taken satisfactory/no credit. Each course must be taken for a minimum of 3 units. Minimum grade requirement for Upper Division courses is "C-". All non-laboratory advanced HUMBIO courses (those numbered 100 to 189) fulfill the Human Biology upper-division requirement. A list of Human Biology overseas courses can be found at the Related Courses (<http://www.stanford.edu/dept/humbio/cgi-bin/?q=node/1382>) web site.

Human Biology Core

Required core sequences (HUMBIO 2A Genetics, Evolution, and Ecology, HUMBIO 2B Culture, Evolution, and Society, HUMBIO 3A Cell and Developmental Biology, HUMBIO 3B Behavior, Health, and Development, and HUMBIO 4A The Human Organism, HUMBIO 4B Environmental and Health Policy Analysis) introduce the biological and social sciences, and most importantly, relationships between the two. Classes meet throughout the academic year. Students must register concurrently for the A and B series. Students should initiate the core in Autumn Quarter of the sophomore year. Freshmen are not permitted to enroll. Majors must earn a minimum letter grade of 'C-' in core courses. The Human Biology core consists of the following courses:

| | | Units |
|-----------|--|-------|
| HUMBIO 2A | Genetics, Evolution, and Ecology | 5 |
| HUMBIO 2B | Culture, Evolution, and Society | 5 |
| HUMBIO 3A | Cell and Developmental Biology | 5 |
| HUMBIO 3B | Behavior, Health, and Development | 5 |
| HUMBIO 4A | The Human Organism | 5 |
| HUMBIO 4B | Environmental and Health Policy Analysis | 5 |

Honors Program

The honors program in Human Biology provides qualified majors the opportunity to work closely with faculty on an individual research project, culminating in an honors thesis. Students may begin honors research from a number of starting points including topics introduced in the core or upper-division courses; independent interests stemming from an internship experience; or collaborating with faculty from the natural, social, or behavioral sciences.

Students may apply to the honors program if they have completed the Human Biology core with a minimum GPA of 3.0, have an overall Stanford GPA of 3.2, and meet other requirements detailed in the honors handbook. Interested students should consult the Human Biology Honors Handbook (<https://humbio.stanford.edu/node/152>) and meet with the Human Biology Associate Director or student services officer.

Most honors projects involve a total of 10-15 units of course work in HUMBIO 193 and 194:

| | | Units |
|------------|---------------------------|-------|
| HUMBIO 193 | Research in Human Biology | 1-5 |
| HUMBIO 194 | Honors | 1-10 |

Admission to the honors program is by submission of an intention to undertake honors research in early February, followed by the application in early March of the junior year. Students planning to undertake honors begin research or preparation as early as completion of the sophomore year.

The honors thesis is normally completed by the middle of Spring Quarter of the senior year. Honors students then present summaries of their research at the Human Biology Honors Poster Symposium in May.

Human Biology also holds a Summer Honors College just prior to Autumn Quarter each year for students who have applied to the honors program. Students apply to Summer Honors College in April of the junior year. For applications, contact the program office.

Minor in Human Biology

A minor in Human Biology provides an introductory background to the relationship between the biological and social aspects of humanity's origin, development, and prospects. Many of the major problems facing human civilization today involve both biological and social aspects. Scientific approaches to these problems are essential, but they must be broadly conceived, integrating what is known of the biological with an understanding of the social and cultural setting in which they exist. Students with a minor in Human Biology are expected to develop a strong background in the integration between the biological and social aspects of human beings.

Students declaring a minor in Human Biology must do so no later than two quarters prior to their intended quarter of degree conferral (for example, a student must declare a minor before the end of Autumn Quarter to graduate the following Spring Quarter).

To minor in Human Biology, students must take the Human Biology Core:

- HUMBIO 2A Genetics, Evolution, and Ecology
- HUMBIO 2B Culture, Evolution, and Society
- HUMBIO 3A Cell and Developmental Biology
- HUMBIO 3B Behavior, Health, and Development
- HUMBIO 4A The Human Organism
- HUMBIO 4B Environmental and Health Policy Analysis
- and one additional upper-division course (for example, any HUMBIO course numbered 100-189).

The student must earn a minimum letter grade of 'C-'. Courses that count towards the fulfillment of major requirements may not be counted towards the minor.

Emeriti: (Professors) Doug Brutlag (Biochemistry), Sanford Dornbusch (Sociology), Stanley Falkow (Microbiology/Immunology), A. Dale Kaiser (Biochemistry), Herant Katchadourian (Human Biology), Donald Kennedy (Biology), Ellen FitzSimmons Porzig (Developmental Biology), Carol Winograd (Medicine)

Director: Paul Fisher (Neurology)

Associate Director: Katherine Preston

Professors: Laurence Baker (Health Research and Policy), Ben Barres (Neurobiology), Donna Bouley (Comparative Medicine), William H. Durham (Anthropology), Heidi Feldman (Pediatrics: Neonatology), Russell D. Fernald (Biology), Paul Fisher (Neurology), Margaret Fuller (Developmental Biology), Garry Gold (Rad/Musculoskeletal Imaging), Lawrence H. Goulder (Economics), James J. Gross (Psychology), H. Craig Heller (Biology), Jill Helms (Surgery), Richard Klein (Anthropology), Tanya Luhrmann (Anthropology), Yvonne Maldonado (Pediatrics: Infectious Diseases), Michael Marmor (Ophthalmology), Gordon Matheson (Orthopaedic Surgery), Roeland Nusse (Developmental Biology), Julie Parsonnet (Medicine: Infectious Diseases), Allan Reiss (Interdisciplinary Brain Science Research), Thomas Robinson (Pediatrics), Robert Sapolsky (Biology), Walter Scheidel (Classics), Randall Stafford (Stanford Prevention Research Center), William Talbot (Developmental Biology), Shripad Tuljapurkar (Biology), Jeffrey Wine (Psychology), Paul Wise (Pediatrics)

Associate Professors: M. Kate Bundorf (Health Reserach and Policy), Firdaus Dhabhar (Psychiatry and Behavioral Sciences), Anne Fernald (Psychology), Brenda Golianu (Anesthesia), Joachim Hallmayer (Psychiatry and Behavioral Sciences - Child and Adolescent Psychiatry

and Child Development), James Jones (Anthropology), Peter Kao (Med/Pulmonary and Critical Care Medicine), Norman G. Miller (Medicine/PCOR), Rob Reich (Political Science), John Rick (Anthropology), Matthew Smith (German)

Assistant Professors: Sanjay Basu (Medicine: Stanford Prevention Research Center), Eran Bendavid (General Internal Medicine), Jorah Dannenberg, (Philosophy), Jeremy Goldhaber-Fiebert (Medicine/PCOR), Alvan Ikoku (Comparative Literature), Michelle Monje-Deisseroth (Neurology), Jelena Obradovic (Education), Jamie Zeitzer (Psychiatry and Behavioral Sciences)

Professor (Research): Christopher Gardner (Stanford Prevention Research Center), David Lyons (Psychiatry and Behavioral Sciences), Marcia Stefanick (Stanford Prevention Research Center)

Associate Professors (Research): Karen Parker (Psychiatry and Behavioral Sciences)

Professors (Teaching): Donald Barr (Pediatrics), David Magnus (Pediatrics/SCBE). Robert Siegel (Microbiology and Immunology)

Associate Professors (Teaching): Catherine Heaney (Psychology), Lianne Kurina (Med/General Internal Medicine), Eunice Rodriguez (Pediatrics), Kristin Sainani (Health Research and Policy – Epidemiology)

Clinical Associate Professors: Mary Therese Jacobson (Obstetrics and Gynecology)

Clinical Assistant Professors: Cynthia Nguyen (Psychiatry and Behavioral Sciences), Rita Popat (Health Research and Policy, Epidemiology)

Senior Research Scholar: Wesley F. Alles (Med/HIP/BeWell)

Other Teaching Faculty and Staff: William Abrams, Maya Adam (Pediatrics - Infectious Diseases), Judy Chu, Sophia Colamarino (Psychiatry and Behavioral Sciences), Anne Firth-Murray, Anne Friedlander, Ronald Garcia (Center for Excellence), Renu Heller (Biology), Lisa Medoff, Joe Nation (Public Policy), Katherine Preston, Lisa Goldman Rosas (Medicine: Stanford Prevention Research Center), Annette Salmeen, Darwin Scott Smith (Microbiology and Immunology), Rebecca Shultz (Orthopaedic Surgery - Sports Medicine), Jennifer Wolf (Graduate School of Education), Nathan Wolfe

Course Associates: Anne Marie Barber, Rachel Bent, Michael Levy, Charlotte Martin, Veronica Patterson, Julia Quintero, Amy Ransohoff, Estevan Santiago

Honors Chair: Katherine Preston

Overseas Studies Courses in Human Biology

The Bing Overseas Studies Program (<http://bosp.stanford.edu>) manages Stanford study abroad programs for Stanford undergraduates. Students should consult their department or program's student services office for applicability of Overseas Studies courses to a major or minor program.

The Bing Overseas Studies course search site (<https://undergrad.stanford.edu/programs/bosp/explore/search-courses>) displays courses, locations, and quarters relevant to specific majors.

For course descriptions and additional offerings, see the listings in the Stanford Bulletin's ExploreCourses (<http://explorecourses.stanford.edu>) or Bing Overseas Studies (<http://bosp.stanford.edu>).

| | | Units |
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| OSPAUSTL 10 | Coral Reef Ecosystems | 3 |
| OSPAUSTL 25 | Freshwater Systems | 3 |

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| OSPAUSTL 30 | Coastal Forest Ecosystems | 3 |
| OSPCPTWN 43 | Public and Community Health in Sub-Saharan Africa | 4 |
| OSPCPTWN 63 | Socio-Ecological Systems | 3 |
| OSPCPTWN 64 | Behavior Change for Promoting Health | 4 |
| OSPFLO 85 | Bioethics: the Biotechnological Revolution, Human Rights and Politics in the Global Era | 4 |
| OSPMADRD 57 | Health Care: A Contrastive Analysis between Spain and the U.S. | 4 |
| OSPMADRD 72 | Issues in Bioethics Across Cultures | 4 |
| OSPOXFRD 27 | Medical Ethics through Literature and Film | 4 |
| OSPPARIS 51 | Development and Education of Young Children | 4 |
| OSPPARIS 83 | The Cancer Problem: Causes, Treatment, and Prevention | 4-5 |
| OSPPARIS 88 | Principles of Biochemistry | 3 |
| OSPPARIS 153X | Health Systems and Health Insurance: France and the U.S., a Comparison across Space and Time | 5 |