

PROGRAM IN HUMAN BIOLOGY

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Courses given in Program in Human Biology have the subject code HUMBIO. For a complete list of subject codes, see Appendix.

The Program in Human Biology is an interschool, interdepartmental, undergraduate major. The program's mission is to provide an interdisciplinary approach to understanding the human being from biological, behavioral, social, and cultural perspectives.

The program seeks: (a) to provide a broad and rigorous introduction to the biological and behavioral sciences and their interrelationships, and (b) to explore how this knowledge, in conjunction with studies in other fields, can be applied to analyze and formulate health, environmental, and other public policies that influence human welfare.

To achieve these goals, all students complete a 30-unit core sequence, normally in the sophomore year, that 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 roadmap 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 <http://humbio.stanford.edu/>.

UNDERGRADUATE PROGRAMS BACHELOR OF ARTS

The B.A. in Human Biology (HUMBIO) requires a minimum of 84 units in the major divided between four levels of courses:

- 1. Fundamental Program:** at least 38 units, to include
Human Biology Core (30 units)
Statistics (4-5 units)
Internship (HUMBIO 197; 4 units)
The Human Biology Core refers to HUMBIO 2A and 2B, 3A and 3B, and 4A and 4B. See "Required Courses" below for more information. HUMBIO 3B fulfills the policy requirement of the major.
Statistics may be selected from courses such as STATS 60 or 141, PSYCH 10, ECON 102A, EDUC 160, and BIOSCI 141. For questions about other statistics courses that might fulfill this requirement, see the program office.
The core and statistics courses must be taken for a letter grade by majors.
The internship requirement, an independent field experience project, is graded satisfactory/no credit only.
- 2. Foundation Courses:** 20-unit minimum. Total units vary, depending on the focus of study selected by the student for the area of concentration. They may include introductory-level courses from across the University and lab courses. A maximum of 10 premed units (from the chemistry, physics, and calculus series, and biology lab courses) are allowed.
- 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 must be numbered 100 to 189. Three or more departments must be represented in the concentration. Each course must be taken for a minimum of 3 units. 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. Examples of numerous possible areas of concentration are available in the program's student advisers' office.
- 4. Upper-Division Courses:** students must take three Human Biology upper-division courses numbered 100 to 189 outside their area of concentration. Lab courses cannot be used to fulfill the upper-division requirement. One upper-division course may be taken satisfactory/no credit. Each course must be taken for a minimum of 3 units. All non-laboratory advanced HUMBIO courses (those numbered 100 to 189) fulfill the Human Biology upper-division requirement, including those listed as "enroll in" another department.

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. Final approval of the proposed course of study rests with the faculty adviser. It

is important to declare early, preferably by the end of Spring Quarter of the sophomore year, but not later than the end of Autumn Quarter of the junior year; students must petition the director to declare later than 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.

MINORS

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 we know of the biological with an understanding of the social and cultural setting in which they exist. Students with a minor in Human Biology will have a strong background in the integration between the biological and social aspects of humans.

To minor in Human Biology, students must take the core curriculum (HUMBIO 2A, 2B, 3A, 3B, 4A, and 4B) and one additional upper-division course (for example, any course offering by Human Biology numbered 100-189, including courses crosslisted with other departments or programs). These must be taken for a minimum letter grade of 'C-'. Courses that count towards the fulfillment of major requirements may not be counted towards the minor.

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 the Autumn Quarter to graduate the following Spring Quarter).

HONORS PROGRAM

The honors program in Human Biology affords 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 once they have completed the Human Biology core, have an overall Stanford grade point average (GPA) of 3.2, and meet other requirements detailed in the honors handbook. Interested students should consult resources in the Human Biology office including the *Human Biology Honors Handbook*, the honors program application available from the student services office, and appointments during office hours with the Human Biology honors chair.

Courses of interest to honors students include: HUMBIO 193, Research in Human Biology, and HUMBIO 194, Honors. Most honors projects involve a total of 10-15 units of course work in HUMBIO 193 and 194.

Admission to the honors program is by application in April 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. Each honors student then presents a brief summary of honors research at the Human Biology Honors 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.

STOREY HOUSE

Storey House, 544 Lasuen Mall, is an undergraduate residence for the Human Biology Academic Theme House, 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.

STUDENT ADVISERS

Human Biology has an advising program comprising faculty and student advisers. Before declaring Human Biology as their undergraduate major, each student must meet with one of six student advisers who assist them in developing a coherent study plan based on an individualized area of concentration, and the selection of foundation, concentration, and upper-division courses. They 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 Advising Extravaganza, the Internship Faire, and Beyond Hum Bio. To maintain high standards of advising that respond to the needs of individual students, student advisers meet weekly with the program's faculty advising chair and the student services coordinator to review the program's policies and specific student inquiries and petitions concerning the program.

COURSES

WIM indicates that the course satisfies the Writing in the Major requirements. AU indicates that the course is subject to the University Activity Unit limitations (8 units maximum).

The faculty and staff of Human Biology prepare a student handbook, on the web at <http://humbio.stanford.edu/>, that provides a detailed description of the Human Biology major and outlines possible areas of concentration. It reflects the most up-to-date information for the academic year and is the definitive guide for Human Biology majors.

REQUIRED CORE

Required core sequences (2A,B, 3A,B, and 4A,B) 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 and take the core in sequence. 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.

HUMBIO 2A,B. Genetics, Evolution, and Ecology: Culture, Evolution, and Society

HUMBIO 2A. Genetics, Evolution, and Ecology—Introduction to the principles of classical and modern genetics, evolutionary theory, and population biology. Topics: micro- and macro-evolution, population and molecular genetics, population dynamics, and community ecology, emphasizing the genetics of the evolutionary process and applications to human populations. GER:DB-NatSci

5 units, Aut (*Durham, Boggs*)

HUMBIO 2B. Culture, Evolution, and Society—Introduction to the evolutionary study of human diversity. Hominid evolution, the origins of social complexity, social theory, and the emergence of the modern world system, emphasizing the concept of culture and its influence on human differences. GER:DB-SocSci

5 units, Aut (*M. Brown, Klein*)

HUMBIO 3A,B. Cell Biology and Developmental Biology: Environmental and Health Policy Analysis

HUMBIO 3A. Cell and Developmental Biology—The principles of the biology of cells: principles of human developmental biology, biochemistry of energetics and metabolism, the nature of membranes and organelles, hormone action and signal transduction in normal and diseased states (diabetes, cancer, autoimmune diseases), drug discovery, immunology, and drug addiction. GER:DB-NatSci

5 units, Win (*Fuller, Kaiser, Nusse, Scott, Talbot*)

HUMBIO 3B. Environmental and Health Policy Analysis—The relationship of the biological sciences to public policy in resource management and conservation practices, the regulation of environmental and health risks, agricultural production, the delivery of health services, the protection of biodiversity, and global climate change. Assigned policy challenges in lectures and section meetings. Readings on actual cases. GER:DB-SocSci, WIM
5 units, Win (Goulder, Barr)

HUMBIO 4A,B. The Human Organism: Biology and Culture

HUMBIO 4A. The Human Organism—Organ system physiology: the principles of neurobiology and endocrinology, and the functions of body organs. The mechanisms of control, regulation, and integration of organ systems function. GER:DB-NatSci
5 units, Spr (Heller)

HUMBIO 4B. Biology and Culture—Introduction to the research and theory on early human development. How psychobiological factors shape the developing child, and how cultural practices shape the environments of childhood and influence human cognitions, emotions, moral judgments, relationships, and social behavior from birth through adolescence. GER:DB-SocSci
5 units, Spr (Feldman)

ADDITIONAL INTRODUCTORY OFFERINGS

HUMBIO 4Y. Practicum in Child Development—Practical experience at Bing Nursery School for 3.5 hours per week. Pre- or corequisite: 4B. (AU)
1 unit, Spr (S. Feldman)

HUMBIO 6. Human Origins—(Same as ANTHSCI 6.) The human fossil record from the first non-human primates in the late Cretaceous or early Paleocene, 80-65 million years ago, to the anatomically modern people in the late Pleistocene, between 100,000 to 50,000 B.C.E. Emphasis is on broad evolutionary trends and the natural selective forces behind them. GER:DB-NatSci
5 units (Klein) not given 2005-06

HUMBIO 14. Introduction to Anthropological Genetics—(Same as ANTHSCI 14.) The extent and pattern of variation among human genomes, the origin of these patterns in human evolution, and the social and medical impact of recent discoveries. Topics include: the Human Genome Project; human origins; ancient DNA; genetic, behavioral, linguistic, cultural, and racial diversity; the role of disease in shaping genetic diversity; DNA forensics; genes and reproductive technology. GER:DB-NatSci
5 units (Mountain) not given 2005-06

HUMBIO 21. Introduction to Brain and Behavior—(Same as BIOSCI 20.) Evolutionary principles to understand how the brain regulates behavior, described in physiological terms, and is influenced by behavioral interactions. Topics include neuron structure and function, transmission of neural information, anatomy and physiology of sensory and motor systems, regulation of body states, the biological basis of learning and memory, and behavioral abnormalities. GER:DB-NatSci
3 units (Fernald) alternate years, given 2006-07

HUMBIO 25. Human Ecology of the Amazon—(Same as ANTHSCI 25.) The diversity of peoples and cultures in the Amazon Basin and the ecosystems in which they live. Themes in ecological anthropology of Amazonia including limiting factors, the protein debate, indigenous knowledge and resource management, and anthropogenic modification. Ethnographic, historical, and archeological evidence. GER:DB-SocSci, EC-GlobalCom
5 units (Ocampo-Raeder) not given 2005-06

HUMBIO 27. Traditional Chinese Medicine—The philosophy and history behind traditional Chinese medicine. Concepts such as Qi, Yin/Yang, meridians, Chinese organs, and the 5 elements. How these concepts are applied through techniques such as acupuncture, herbal medicine, Qi gong, and massage. How traditional Chinese medicine is understood

from a scientific standpoint. Political and socioeconomic implications. Observation of an acupuncturist. Readings on the integration of Eastern and Western medicine and on traditional Chinese medicine.
1 unit, Spr (Golianu)

HUMBIO 60. Population Studies—(Enroll in BIOSCI 146.)
1 unit, Win (Feldman)

HUMBIO 61. Introduction to Philosophy of Science—(Enroll in PHIL 60, HPS 60.)
5 units, Spr (Longino)

HUMBIO 78. Medical Ethics—(Enroll in PHIL 78, ETHICSOC 78.)
4 units, Spr (Jaworska)

HUMBIO 82A. Qualitative Research Methodology—Goal is to develop knowledge and skills for designing and conducting qualitative research studies including purposes, conceptual contexts, research questions, methods, validity issues, and interactions among these facets. Each student designs a qualitative research study.
3 units, Win (J. Wolf)

HUMBIO 82B. Advanced Data Analysis in Qualitative Research—For students writing up their own qualitative research. Students prepare a complete draft presenting their own qualitative research study including results, with reports drafted section by section, week by week. Class provides feedback, guidance, support.
1-3 units, Aut (J. Wolf)

STANFORD INTRODUCTORY SEMINARS

HUMBIO 87Q. Women and Aging—Stanford Introductory Seminar. Preference to sophomores. Biology, diseases, demographics, and politics of aging; relationships and sexuality; wise woman and grandmothers; lifestyles and scientific articles, fiction, art, and film. Research paper or service-learning experience with older women. GER:EC-Gender
4 units, Win (Winograd)

HUMBIO 88Q. Neuroethics: Neurotechnology, Free Will, and the Privacy of Human Thought—Stanford Introductory Seminar. Preference to sophomores. Focus is on neurotechnology and pharmacology for imaging and manipulating the brain. Free will, moral responsibility, and the privacy of human thought. What can be done versus what should be done with pioneering neurotechnologies in research, clinical medicine, and in the public arena including education, athletics, and law.
3 units, Spr (Illes)

HUMBIO 89Q. The Eye and the Implications of Vision—Stanford Introductory Seminar. Preference to sophomores. The working of the eye and vision; comparisons to animal eyes. The role of vision in pursuits such as art, history, literature, and sports. Experience in research and presentation.
3 units, Win (Marmor)

HUMBIO 91Q. Neuroethology: The Neural Control of Behavior—Stanford Introductory Seminar. Preference to sophomores. Animal behavior offers insights about evolutionary adaptations. The origins of the study of animal behavior and its development to the present. Discussion of original research papers. The use and misuse of parallels between animal and human behavior. Possible field trip to observe animals in their natural habitat. GER:DB-NatSci
3 units, Aut (R. Fernald)

HUMBIO 92Q. International Women's Health and Human Rights—Stanford Introductory Seminar. Preference to sophomores. Focus is on women in poorer countries. Issues include women's status, poverty, violence, and unequal access to education, food, and health care. Maternal mortality, sexually transmitted diseases, refugee situations, traditional practices affecting women's and girls' health, trafficking and prostitution, and women's roles as they age. Readings include materials from women's organizations outside the U.S. GER:EC-Gender, WRITE-2
3 units, Aut (Murray)

HUMBIO 94Q. The Nation's Health—Stanford Introductory Seminar. Preference to sophomores. Issues, policies, controversies, and proposed solutions that surround health policy, public health, and health care in the U.S. Factors affecting the health of Americans and the roles of medical care and public health organizations and financing. Weekly student presentations and final research paper.

3 units, Aut (G. Heller)

HUMBIO 95Q. Gender, Culture, and HIV/AIDS—Stanford Introductory Seminar. Preference to sophomores. Issues include biological, social, cultural, psychological, economic, and political aspects of HIV/AIDS. Introduction to research methods and grant-proposal writing skills. Student presentations. Prerequisite: PWR 1. GER:EC-Gender

4 units, Win (N. Brown)

HUMBIO 96Q. The Death Penalty: Policy, Philosophy, and Controversy—Stanford Introductory Seminar. Preference to sophomores.

3-4 units, Spr (Abrams)

HUMBIO 97Q. Sport, Exercise, and Health: Exploring Sports Medicine—Stanford Introductory Seminar. Preference to sophomores. Sports medicine is the practice of clinical medicine at the interface between health and performance, competition and well-being. While sports medicine had its origins in providing care to athletes, medical advances developed in care of athletes exerted a great effect on the nature and quality of care to the broader community. Topics include sports injuries, medical conditions associated with sport and exercise, ethics, coaching, women's issues, fitness and health, and sports science. Case studies.

3 units, Spr (Matheson)

HUMBIO 98Q. The Alien Tort Claims Act of 1789—Stanford Introductory Seminar. Preference to sophomores. The Alien Tort Claims Act of 1789 (ATCA), the oldest American law currently in force, has been used in recent years by foreign claimants of human rights or environmental injury to sue U.S. companies in U.S. courts. International, human rights, and environmental law; civil procedure and legal history; and federalism and the constitutional separation of powers.

4 units, Aut (Rosencranz)

HUMBIO 99Q. Becoming a Doctor: Readings from Medical School, Medical Training, Medical Practice—Stanford Introductory Seminar. Preference to sophomores. For students considering medicine as a career. Goal is to acquaint students with medical school, training in medicine and surgery, and the practice of medicine and surgery. Topics include: how to pick a medical school and a residency; how medicine affects family life, especially children; the differences between surgical and medical specialties; the advantages and disadvantages among academic/teaching, pure research, group practice, HMO, hospital staff, or private practice; malpractice concerns; and financial considerations.

3 units, Aut (Zaroff)

ADVANCED

Open to non-majors with the proper prerequisites. Human Biology majors have preference when enrollment is restricted. All classes listed here fulfill the Human Biology upper-division requirement, including those that say "enroll in" another department.

HUMBIO 101. Assisted Reproductive Technologies—(Enroll in DBIO 202.)

3-4 units, Win (Porzig, Behr)

HUMBIO 102A,B. Children, Youth, and the Law—The legal rights of children and adolescents in the U.S. and how those rights are defined, protected, and enforced through the legal process within the context of the developmental needs of children and youth and competing societal interests. Topics: the origins and definitions of children's rights; adoption; custody; the juvenile justice system (abused, neglected, and dependent children, status offenders such as runaways and truants, and minors accused of crimes); education; informed consent; health care; protection from harm and child welfare; due process; privacy, freedom of expression, and exercise of First Amendment rights. Interactive, using

hypotheticals for discussion and analysis. A and B alternate annually; students may take one or both.

A. 5 units (Abrams) alternate years, given 2006-07

B. 5 units, Win (Abrams)

HUMBIO 103. Parasites and Pestilence: Infectious Public Health Challenges—(Same as MI 103.) Parasitic and other diseases with public health impact. Pathogenesis, clinical syndromes, complex life cycles, and the interplay among environment, vectors, hosts, and reservoirs in historical context to understand public health policy approaches to halting disease transmission. Focus is on World Health Organization tropical disease research-targeted disease entities including: river blindness, sleeping sickness, leishmaniasis, schistosomiasis, mycobacterial disease (tuberculosis and leprosy), malaria, toxoplasmosis, dracunculiasis, and intestinal helminthes. Guest lecturers in disease control. Original proposal to solve a current disease.

4 units, Spr (Smith)

HUMBIO 104. Aging: From Biology to Social Policy—(Enroll in ANTHSCI 171.) What people can expect when they join the ranks of the elderly. Issues include social security, medical care, lifespan, and the cultural, social, and economic consequences of a large elderly population in the U.S. and other countries. Films, service learning component. GER:DB-SocSci

5 units, Win (Barnett)

HUMBIO 106. The Anthropology of Death and Dying—(Same as ANTHSCI 175.) Death as a biocultural process. Funerary practices and attitudes toward dying in different societies. Issues include hospice care, palliative care, and euthanasia. Instructor is an anthropologist and registered nurse with hospice experience. GER:DB-SocSci

5 units (R. Barrett) not given 2005-06

HUMBIO 107. Astrobiology and Space Exploration—Evolution is cast against space and time, focusing on the emergence of life, intelligence, and civilization on Earth and possibly elsewhere. Human space exploration and the biological, psychological, sociological, and philosophical issues. Integrates information from astrophysics, biochemistry, chemistry, evolutionary biology, geology, paleontology, physiology, psychology, and sociology. Taught by scientists from NASA Ames Research Center. Enrollment limited to 30. Prerequisite: one year college-level mathematics, physics, chemistry, biology, or psychology; or consent of instructor.

4 units, Win (Rothschild)

HUMBIO 108. Boys' Psychosocial Development—From early childhood through adolescence. Emphasis is on how boys' lives and experiences are embedded within their interpersonal relationships and social and cultural contexts. Interdisciplinary approach including perspectives from fields such as psychology, sociology, anthropology, family studies, and education. GER:EC-Gender

4 units, Spr (Chu)

HUMBIO 109. Human Behavioral Biology—(Enroll in BIOSCI 150.)

3-6 units, Spr (Sapolsky) alternate years, not given 2006-07

HUMBIO 110. Vertebrate Biology—The evolution, form, function, and behavior of the vertebrates including primitive fishes, birds, mammals, and human beings. Prerequisite: Biological Sciences or Human Biology core.

3-4 units (Porzig) not given 2005-06

HUMBIO 111. Human Physiology—(Enroll in BIOSCI 112.)

4 units, Win (Garza)

HUMBIO 112. Functional Anatomy of Exercise—Interdisciplinary approach. Anatomy of the body's major joints in the context of exercise and movement. Emphasis is on adaptations that occur with intensity and nature of exercise, age, and disease. Histology and properties of bone, muscle, tendons, ligaments, and other connective tissue. Physiology, pathology, and biomechanics.

4 units, Spr (Garza)

HUMBIO 113. The Economic Individual in the Behavioral Sciences—(Same as BIOSCI 128/228.) Empirical evidence for the idea of the economic individual and its associated models in economics. How the economic individual maximizes utility and cooperates with others only when it is rational to do so. Applications of this idea to animal behavior. Readings include political philosophy, psychology, and evolutionary biology; recent research articles on empirical work in animal behavior. Student presentations.

3 units, Aut (Gordon, Satz)

HUMBIO 114. The Human Genome and Disease—(Same as BIOSCI 109/209.) The variability of the human genome and the role of genomic information in research, drug discovery, and human health. Concepts and interpretations of genomic markers in medical research and real life applications. Human genomes in diverse populations. Original contributions from thought leaders in academia and industry and interaction between students and guest lecturers. GER:DB-NatSci

3 units, Spr (R. Heller, Kumm)

HUMBIO 115A. Humans and Viruses—(Same as MI 115A.) Concepts in biology and the social sciences, focusing on emerging infections, viral classification, transmission and prevention, vaccination and treatment, eradication of disease, viral pathogenesis, mechanisms of virally-induced cancer, and viral evolution. Topics: molecular biology of genetic shift and drift in influenza virus, cellular tropism of HIV, developmental biology of virally-induced birth defects, clinical aspects of infantile diarrhea, social aspects of the common cold, policy issues of blood antibody tests, factors in pathogenesis and transmission of prions. Prerequisites: Human Biology core or consent of instructor.

6 units, Aut (Siegel)

HUMBIO 115B. The Vaccine Revolution—(Same as MI 115B.) Advanced seminar. Human aspects of viral disease, focusing on recent discoveries in the area of vaccine development and emerging infections. Journal club format: students select articles from primary scientific literature, write formal summaries, and synthesize it into a literature review on a specific topic. Emphasis is on analysis, experimental design, and interpretation of data. Oral presentations. Enrollment limited to 10. Prerequisite: 115A.

6 units (Siegel) alternate years, given 2006-07

HUMBIO 117A. Community Health: Assessment and Planning I—Major determinants of health in a community. Working with community partners to identify health issues and plan programs and policies to prevent disease and promote health. Service learning component involving students in utilizing community health assessment techniques.

3 units, Win (Heaney)

HUMBIO 117B. Community Health: Assessment and Planning II—Continuation of 117A. Service learning course with emphasis on conducting community health assessment and planning projects in collaboration with community-based organizations.

3 units, Spr (Heaney)

HUMBIO 117S. Work, Stress, and Health—How work is experienced in the U.S. and how it affects American health and quality of life. Topics include technological innovations, global competition, and demographic and social transitions.

3 units (Heaney) not given 2005-06

HUMBIO 118. Human Diversity: A Linguistic Perspective—(Same as ANTHSCI 112.) The diversity and distribution of human language and its implications for the origin and evolution of the human species. The origin of existing languages and the people who speak them. Where did current world languages come from and how can this diversity be used to study human prehistory? Evidence from related fields such as archaeology and human genetics. Topics: the origin of the Indo-European languages, the peopling of the Americas, and evidence that all human languages share a common origin.

3 units, Spr (Ruhlen)

HUMBIO 119. Conservation Biology—(Same as BIOSCI 144.) Principles and application of the science of preserving biological diversity. Topics: sources of endangerment of diversity; the Endangered Species Act; conservation concepts and techniques at the population, community, and landscape levels; reserve design and management; conflict mediation. Case studies and local field trips. 3 units if taken without field trips. Prerequisites: BIOSCI 101, or HUMBIO 2A with consent of instructor. GER:DB-NatSci

3-4 units, Win (Boggs, Launer)

HUMBIO 120. Human Nutrition—The study of food, and the nutrients and substances therein. Their action, interaction, and balance in relation to health and disease. Emphasis is on the biological, chemical, and physiological processes by which humans ingest, digest, absorb, transport, utilize, and excrete food. Dietary composition and individual choices are discussed in relationship to the food supply, and to population and cultural, race, ethnic, religious, and social economic diversity. The relationships between nutrition and disease; eating disorders; ethnic diets; vegetarianism; nutritional deficiencies; nutritional supplementation; phytochemicals; and food safety. Prerequisite: Human Biology core or consent of instructor.

3 units, Spr (Gardner)

HUMBIO 122. International Health Policy: Comparative National Health Care Systems—The structure and policies of national health care systems in Europe, N. America, and Japan. How other countries have addressed issues of organization, finance, and allocation of scarce health care resources. Limited enrollment. Prerequisites: HUMBIO 160, consent of instructor.

4 units, Win (Lee, G. Heller)

HUMBIO 123. Adolescent Sexuality—Developmental perspective. Issues related to scientific, historical, and cultural perceptions; social influences on sexual development; sexual risk; and the limitations and future directions of research. Sexual identity and behavior, sexually transmitted diseases including HIV, pregnancy, abortion, gay and lesbian youth, sex education and condom availability in schools, mass media, exploitative sexual activity, and difficulties and limitations in studying adolescent sexuality. Legal and policy issues, gender differences, and international and historical trends. Research project, including original data collection. Limited enrollment. GER:EC-Gender

3 units, Spr (N. Brown)

HUMBIO 124. Principles of Sleep Research—(Enroll in BIOSCI 149.)

4 units (Franken, C. Heller) not given 2005-06

HUMBIO 126. Adolescent Development—Adolescence from sociological, psychological, and psychiatric perspectives. Topics: physical, physiological, and cognitive development; identity; peer group; parent/child relations; impact of school; vocational development; and problem outcomes (eating disorders, violence, and teen pregnancy). Prerequisite: 3B or PSYCH 1, or consent of instructor.

4 units, Win (S. Feldman)

HUMBIO 127. From Question to Answer: Conducting Research in the Social Sciences—For juniors preparing for honors research in their senior year. Small groups design, conduct, analyze, and write up original research. Research skills including how to design a survey, enter data on a computer, and data analysis. Enrollment limited to 12. Pre- or corequisite: PSYCH 10 or equivalent, or consent of instructor.

4 units, Aut (S. Feldman)

HUMBIO 129. Ethnicity and Medicine—(Enroll in INDE 244.)

1-3 units, Spr (R. Garcia)

HUMBIO 131. Natural Resources Policy—Focus is on federal public land and natural resources policy; mining, timber, and grazing law and policy; the legal aspects of forest, range, park, wilderness, wetlands, and wildlife management; recreation and preservation; and related issues. The role of the courts, administrative discretion, the Endangered Species Act, and the tension between protecting resources and respecting

property rights. Students research one aspect of law and policy governing the management of natural resources.

5 units, Spr (Rosencranz)

HUMBIO 132. Seminar on Problem Behavior in Adolescence—Risk, protective factors, treatments, and intervention programs designed to ameliorate or prevent these problems. Externalizing behaviors (violence, delinquency, drug abuse, risk taking), internalizing problems (depression, eating disorders, suicide), and sexuality-related problems (teen pregnancy, date violence, STDs/HIV). Enrollment limited to 20. Prerequisite: 126 or consent of instructor.

4 units (S. Feldman) not given 2005-06

HUMBIO 133. Obesity in America: Clinical and Public Health Implications—Interdisciplinary clinical, research, and policy approaches. The prevalence, predictors, and consequences of obesity and diabetes; biological and physiological mechanisms; clinical treatments including medications and surgery; and the relevance of behavioral, environmental, economic, and policy approaches to obesity prevention and control. Case studies.

3 units, Win (Kiernan, Stafford)

HUMBIO 134. Ecological Anthropology—(Same as ANTHSCI 164.) Dynamics of culturally inherited human behavior and its relationship to social and physical environments. Topics include a history of ecological approaches in anthropology, subsistence ecology, sharing, risk management, territoriality, warfare, and resource conservation and management. Case studies from Australia, Melanesia, Africa, and S. America. GER: DB-SocSci

3-5 units (R. Bird) not given 2005-06

HUMBIO 135. Global Environmental Policy—Advanced seminar. Focus is on international management of regional and global environmental issues, and on the international institutions and agreements created to manage them. The need for international environmental law, its sources, and the participants in its creation and implementation. What works in international environmental management and what does not. Topics: ozone depletion, global warming, forests, transboundary and marine waters, Antarctica, endangered species, biodiversity, plant genetic resources, trade and the environment, and the rights of indigenous people. The future of global environmental policy and law.

5 units, Win (Rosencranz)

HUMBIO 136. Foundations of Bioethics—(Enroll in INDE 136.)

3 units, Win (D. Magnus)

HUMBIO 137. Demography: Health, Development, Environment—(Same as BIOSCI 102.) Demographic methods and their application to understanding and projecting changes in human infant, child, and adult mortality and health, fertility, population, sex ratios, and demographic transitions. Progress in human development, capabilities, and freedoms. Relationships between population and environment. Prerequisites: numeracy and basic statistics. GER:DB-SocSci

3 units, Spr (Tuljapurkar)

HUMBIO 138. Genes and Environment in Disease Causation: Implications for Medicine and Public Health—The historical, contemporary, and future research and practice among genetics, epidemiology, clinical medicine, and public health as a source of insight for medicine and public health. Genetic and environmental contributions to multifactorial diseases; multidisciplinary approach to enhancing detection and diagnosis. The impact of the Human Genome Project on analysis of cardiovascular and neurological diseases, and cancer. Ethical and social issues in the use of genetic information.

2-4 units (Nelson, Popat) not given 2005-06

HUMBIO 139. Fat Nutrition and Current Health Concerns—Relationships between fat, nutrition, and fitness, and heart disease, cancer, obesity, and diabetes. Proposed mechanisms for benefits of antioxidants and omega-3 fats. Historical and economic influences on fat nutrition. Prerequisites: 3A, 4A, or equivalents.

3 units, Spr (Endemann)

HUMBIO 140. Social Class, Race, Ethnicity, Health—(Enroll in SOC 141A.)

5 units, Win (Barr)

HUMBIO 141. Race, Poverty, and the Environment—Connection between race and poverty and environmental conditions. Theoretical and practical approaches to environmental justice. Empirical evidence of environmental injustice, and causes and barriers to remediating it. How the courts, legislative bodies, executive agencies, public interest organizations, and community groups, and their lawyers have responded.

4 units, Win (Rosencranz)

HUMBIO 142C. Alternative Spring Break: AIDS and HIV in San Francisco—Preparation for the alternative Spring Break trip in which students visit and volunteer at HIV support organizations. Background on HIV and its impact on the San Francisco community.

1 unit, Win (Siegel)

HUMBIO 142G. Post-Field Seminar: A Practical Next Step for Students Returning from Abroad—For students who have recently worked abroad for two months or longer to share what they learned through international research, internship, or volunteer work. Lecture component connects international experiences with at-home activism and helps students explore directions for future work, either domestically or internationally, that builds on their experiences abroad. Students create a final product to benefit the community in which they worked and/or be used as an educational tool locally. Focus is on a practical next step for students interested in international development and related fields.

1 unit, Aut (Siegel)

HUMBIO 142P. HIV Prevention in East Africa Prefield Seminar

3 units (Siegel) not given 2005-06

HUMBIO 143. Globalization, Labor, and the Environment—Interdisciplinary. The responsibility of multinational corporations and institutions (World Bank, WTO, IMF) in the global economy, emphasizing labor and environmental standards in developing countries. Local and global case studies and research focus on social justice and empowerment for domestic and foreign victims of labor, environmental, and human rights abuses, the role of certain multinational institutions and corporations in those abuses, and tools for holding these bodies more accountable. Service-learning component with Bay Area organizations.

4 units, Spr (Rosencranz)

HUMBIO 144. Conservation and Evolutionary Ecology—(Enroll in ANTHSCI 169.)

3-5 units, Spr (D. Bird)

HUMBIO 145. Children's Citizenship: Justice Across Generations—(Enroll in POLISCI 131.)

5 units, Spr (Reich)

HUMBIO 146. The AIDS Epidemic: Biology, Behavior and Global Response—Interdisciplinary approach to the HIV/AIDS pandemic from the view of public health, public policy nationally and internationally. The global epidemic of a fatal, sexually transmitted disease has led to attempts to change human behavior, produce a vaccine, and other approaches that bring into sharp focus the need for cost effectiveness analysis as a part of influencing public policy.

3 units (Katzenstein) not given 2005-06

HUMBIO 147. Controlling Climate Change in the 21st Century—(Enroll in EARTHSYS 147, BIOSCI 147.)

3 units (Schneider, Rosencranz) alternate years, given 2006-07

HUMBIO 148. Promoting Health Over the Life Course: Multidisciplinary Perspectives—Disease prevention and health promotion topics pertinent to different stages of the life span with focus on nutrition, physical activity, obesity, and other risk factors. Focus is on scientific investigation, the application of behavioral science to risk reduction strategies, and the importance of health promotion as a social and economic imperative.

3 units, Aut (Alles, Stefanick)

HUMBIO 149. Birds to Words: Cognition, Communication, and Language—(Enroll in PSYCH 137.)

3 units, Aut (A. Fernald, Ramsar)

HUMBIO 150. Current Topics and Controversies in Women's Health—Interdisciplinary. Topics include health research, legal and policy issues, sex and gender differences, scientific and cultural perspectives, social influences, environmental and lifestyle effects on health, complementary medicine, and issues related to special populations.

3 units (Staff) not given 2005-06

HUMBIO 152. Environment and Growth in Developing Countries—(Enroll in INTNLREL 135.)

5 units, Aut (Rosencranz)

HUMBIO 153. Reading: Science, Education, and Politics—(Same as PSYCH 153.) The intellectual foundations of reading curriculum development including contributions of scientists, educators, and policy makers. Neural mechanisms of reading including the methodology used to measure complex behavior. Intervention studies to improve reading skills, and the implications of basic and applied science for social policy.

3 units, Spr (Wandell, Dougherty)

HUMBIO 154. Cancer Epidemiology—Epidemiological methods relevant to human research in cancer. The concepts of risk; case-control, cohort, and cross-sectional studies; clinical trials; bias; confounding; interaction; screening; and causal inference. Social, political, economic, and ethical controversies surrounding cancer screening, prevention, and research.

4 units, Win (Fisher)

HUMBIO 155. Exercise Physiology—How body systems respond to the stress of acute exercise and adapt to chronic exercise training. How the cardiovascular system adapts to optimize oxygen delivery and utilization, how muscles generate force and hypertrophy in response to training, how metabolic/biochemical pathways are regulated to support the increased energy demand of exercise. Theories on the causes of fatigue and muscle soreness, and on what limits human performance. Applied topics such as the effects of aging, gender, and environmental conditions (high altitude, heat, cold) on exercise capacity will also be discussed. Prerequisite: Human Biology core or consent of instructor.

4 units, Win (Friedlander)

HUMBIO 155S. Applied Topics in Exercise Physiology and Metabolism—Student-selected topics in exercise physiology. Emphasis is on readings of scientific research. Student presentations. Summary paper. Enrollment limited to 12. Prerequisites: 155, consent of instructor.

3 units, Spr (Friedlander)

HUMBIO 156. Human Developmental Biology and Medicine—(Same as DBIO 156.) The biological, medical, and social aspects of normal and abnormal human development. Topics: in vitro fertilization and embryo transfer; gene and cell therapy; gametogenesis; pattern formation in the nervous system and limb development; gene and grand multiple pregnancies; prematurity, in utero effects of teratogens; sex determination and differentiation; growth control; gigantism and dwarfism; neural tube defects; cardiac morphogenesis; progress in the developmental biology of humans. Limited enrollment. Prerequisites: Human Biology or Biological Sciences core, or consent of instructor.

4 units, Spr (Porzig)

HUMBIO 157. The Stem Cell: Science, Ethics, and Politics—The biology of stem cells. Their role in human development and potential for treating disease. Guest lectures by biologists, ethicists, and legal scholars. Prerequisite: Biology or Human Biology Core or consent of instructor.

3 units, Win (Nusse, C. Scott, Weissman)

HUMBIO 158. Human Abilities—(Enroll in EDUC 255, PSYCH 133.)

3 units (Shavelson) not given 2005-06

HUMBIO 159. Sports Medicine—(Same as MED 260.) Sports, exercise, health, and medicine throughout the human performance continuum. Exercise as therapy; injuries and illnesses that result from sports and exercise. Sources include physiology, nutrition, psychology, and biomechanics. Medical problems exacerbated or caused by exercise and sport; maximizing performance in elite athletes; and population-based issues such as exercise and its relationship to health, women's issues, drugs in sport, and aging. Prerequisite: medical school enrollment, upper-division Human Biology standing, or consent of instructor.

4 units, Win (Matheson, Garza)

HUMBIO 160. Health Care in America: The Organizations and Institutions that Shape the Health Care System—Focus is on key organizations and institutions that shape U.S. health policy and health care delivery. How to assess options for health care reform.

4 units, Aut (Barr)

HUMBIO 160A. American Health Policy—Issues in health care policy making, the evolution of current systems, and theories underlying efforts for change. The national search for solutions to the problems of the uninsured, and the feasibility, options, and ramifications of universal health insurance in light of past experience and stakeholder views. Student presentations. Prerequisites: HUMBIO 160, consent of instructor. GER:DB-SocSci

3 units, Spr (G. Heller, Lee)

HUMBIO 160W. Seminar in Federal Health and Environment Programs and Agencies—Priority to students going to Stanford in Washington during Winter Quarter. The role of federal agencies and Congress in health policy making, and the agencies' role in implementation of health and environmental policies. Emphasis is on federal policies, but includes federal-state relations. Enrollment limited to 25.

3 units, Aut (Lee)

HUMBIO 161. Human Behavioral Ecology—(Same as ANTHSCI 163.) Theory, method, and application in anthropology. How theory in behavioral ecology developed to understand animal behavior is applied to questions about human economic decision making in ecological and evolutionary contexts. Topics include decisions about foraging and subsistence, competition and cooperation, mating, and reproduction and parenting. GER:DB-SocSci

3-5 units, Win (R. Bird)

HUMBIO 163. Neural Systems and Behavior—(Enroll in BIOSCI 163.)

4 units, Aut (Fernald)

HUMBIO 166. The Death Penalty: Human Biology, Law, and Policy—Combines academic study with direct student involvement. Students participate in forensic research and case investigation, including DNA evidence, psychological and physiological development, mental and physical disabilities, and witness interviews. The philosophy, structure, and application of capital punishment in the U.S. Goal is to examine, understand, and challenge the issues involved in the death penalty from the perspective of involvement in a real case. Course not taught from a preconceived belief or political or philosophical agenda except to involve students in an intellectual challenge of policy and philosophy. May be repeated for credit.

3 units, Aut, Spr (Abrams)

HUMBIO 167. International Health—Concepts of health and wellness and major descriptors and determinants of health status. International organizations and control programs, disease-related problems within population groups from an epidemiologic viewpoint, health care delivery methods, efforts to improve health through examination of current and previous programs and projects. Cultural, economic, and political contexts in international health. Prerequisites: Human Biology core or consent of instructor.

4 units (Siegel) not given 2005-06

HUMBIO 168. Medical Anthropology—(Same as ANTHSCI 170.) The crosscultural study of the health beliefs and healing systems around the world. How social processes shape human health. GER:DB-SocSci, EC-GlobalCom

3 units, Win (R. Barrett)

HUMBIO 169. Critical Issues in International Women's Health—Women's lives, from childhood through adolescence, reproductive years, and aging. Economic, social, and human rights factors, and the importance of women's capacities to have good health and manage their lives in the face of societal pressures and obstacles. Emphasis is on life or death issues of women's health that depend on their capacity to negotiate or feel empowered, including maternal mortality, violence, HIV/AIDS, access to abortion, and sex trafficking. Organizations addressing these issues.

4 units, Win (Firth-Murray)

HUMBIO 174. Ethics and Politics in Public Service—(Enroll in POLISCI 133, ETHICSOC 133.)

5 units, Aut (Reich)

HUMBIO 175. Health Care as Seen Through Medical History, Literature, and the Arts—The differences between disease as pathology and as the patient's experience. Topics include patient-doctor relationships, medical technology, the changing focus on illness, gender issues, mental illness, sick children, death and dying.

4 units, Aut (Zaroff)

HUMBIO 175S. The Literature of Health Care: Novels and Theater of Illness—Illness and disease through novels and plays by authors including Shakespeare, Miller, Sophocles, Hemingway, and Camus. How sickness involves the patient, family, community, and state.

4 units, Spr (Zaroff)

HUMBIO 177. Skeletal Development and Evolution—(Enroll in ME 280.)

3 units, Spr (Carter)

HUMBIO 178. Community Health Psychology—(Same as PSYCH 101.) Social ecological perspective on health emphasizing how individual health behavior is shaped by social forces. Topics include: biobehavioral factors in health; health behavior change; community health promotion; and psychological aspects of illness, patient care, and chronic disease management.

3 units, Spr (Heaney)

HUMBIO 179. Environmental Change and Emerging Infectious Diseases—(Same as ANTHSCI 179/279.) The changing epidemiological environment. How human-induced environmental changes, such as global warming, deforestation and land-use conversion, urbanization, international commerce, and human migration, are altering the ecology of infectious disease transmission, and promoting their re-emergence as a global public health threat. Case studies of malaria, cholera, hantavirus, plague, and HIV. GER:DB-SocSci

3-5 units, Win (Durham, Jones)

HUMBIO 180. Human Osteology—(Same as ANTHSCI 133A/233A.) The human skeleton. Focus is on identification of fragmentary skeletal remains. Analytical methods such as paleopathology, taphonomy, and forensic techniques. Students work independently in laboratory with the collection. GER:DB-NatSci

5 units, Win (DeGusta)

HUMBIO 181. The Evolution of Human Diet—(Enroll in ANTHSCI 173A.)

5 units (Jones) not given 2005-06

HUMBIO 182. Biological Clocks—(Same as BIOSCI 135.) The biological basis for endogenous timekeeping in organisms from flies to human beings. How biological clocks are constructed at the molecular, tissue, and behavioral levels; how these clocks interact with other physiological systems and allow animals to anticipate changes in their environment. Applications of circadian rhythm principles to treating human disorders

and diseases such as cancer. Prerequisite: Biological Sciences or Human Biology core, or consent of instructor. GER:DB-NatSci

3 units, Spr (C. Heller, Ruby)

HUMBIO 185. Science and Religion—(Enroll in RELIGST 270.)

4 units (Bergman, Eisen) not given 2005-06

HUMBIO 186. Evolution of Human Disease—(Enroll in ANTHSCI 172.) Seminar. Understanding human health and disease from an evolutionary perspective. Topics: Darwinian medicine, genes and disease, aging, infectious diseases, mental illness, and cancer. Prerequisites: 2A,B, upper division standing, or consent of the instructor.

5 units (R. Barrett) not given 2005-06

HUMBIO 187. Introduction to Imaging and Image-Based Human Anatomy—(Enroll in RAD 220, BIOE 220.)

3 units, Win (Gold, K. Pauly)

HUMBIO 189. Philosophy of Biology—(Enroll in PHIL 167A.)

4 units (Staff) not given 2005-06

HUMBIO 193. Research in Human Biology—Independent research conducted under faculty supervision, taken junior or senior year, normally (but not necessarily) in pursuit of an honors project. May be taken more than one quarter for credit. Students must complete application in student services office.

1-5 units, Aut, Win, Spr (Staff)

HUMBIO 194. Honors—Completion of the honors project, normally taken in the student's final quarter. First component: the honors thesis, a final paper providing evidence of rigorous research, fully referenced, and written in an accepted scientific style. Second component: participation in the honors symposium, including a 10-minute oral presentation followed by a brief question and answer session. Prerequisites: 193 (or 199), and acceptance into the honors program.

1-10 units, Aut, Win, Spr (Staff)

HUMBIO 197. Human Biology Internship—Limited to and required of Human Biology majors. The internship is a supervised field, community, or lab experience of student's choosing, pre-approved by Human Biology faculty and student advisers, and initiated at least three quarters prior to graduation. May be repeated for credit. Prerequisite: Human Biology Core.

1-4 units, Aut, Win, Spr (Staff)

HUMBIO 198. Senior Tutorial in Human Biology—Reading for Human Biology majors in exceptional circumstances and under sponsorship of Human Biology associated faculty. Students must apply through Human Biology student services before registering. Reading list, paper, and evaluation required.

1-5 units, Aut, Win, Spr (Staff)

HUMBIO 199. Directed Reading/Special Projects—Human Biology majors must obtain a sponsor from the Human Biology associated faculty or the Academic Council. Non-majors and students who have not declared must obtain a sponsor only from the Human Biology associated faculty. Students must complete application in student services office.

1-4 units, Aut, Win, Spr (Staff)

HUMBIO 200. Teaching of Human Biology—For upper division undergraduates and graduate students. Practical experience in teaching Human Biology or serving as an assistant in a lecture course.

1-5 units, Aut, Win, Spr (Staff)

OVERSEAS STUDIES

Descriptions of these courses are in the "Overseas Studies" section of this bulletin or at the Overseas Studies office, 126 Sweet Hall. Students overseas are encouraged to participate in a wide range of internships and independent research as well.

AUSTRALIA

HUMBIO 61X. Coral Reef Ecosystems—(Same as BIOSCI 109Z, EARTHSYS 120X.)

3 units, Win (Arrigo, Dove, Hoegh-Guldberg)

HUMBIO 62X. Coastal Resource Management—(Same as BIOSCI 110Z, EARTHSYS 121X.)

3 units, Win (Johnstone)

HUMBIO 63X. Coastal Forest Ecosystems—(Same as BIOSCI 111Z, EARTHSYS 122X.)

3 units, Win (Duke, Pole)

HUMBIO 121X. From Sprit to Brain to Mind: The Evolving Understanding of Neurology and Neuroscience

3 units, Spr (Giffard)

OXFORD

HUMBIO 122X. Comparative Health Care Systems: UK and U.S

4 units, Win (Senior)

HUMBIO 175X. Medical Ethics through Literature, Film, and Theater

4 units, Spr (Giffard)

PARIS

HUMBIO 153X. Health Systems and Health Insurance: France and the U.S., a Comparison across Space and Time—(Same as PUBLPOL 111P.)

4-5 units, Win (Staff)

SEMINARS

HUMBIO 148X. Public Health and Primary Health Care in a Changing Community Context—Location: Cape Town, South Africa.

4 units, Win (Stanton)