

# SCHOOL OF MEDICINE

*Dean: Philip Pizzo*

*Senior Associate Dean for Graduate Education and Postdoctoral Affairs: John Pringle*

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The School of Medicine offers courses of study leading to the M.S., Ph.D., and M.D. degrees.

## UNDERGRADUATE PROGRAMS

At the undergraduate level, a number of the school's courses are open to any registered Stanford student who has fulfilled the prerequisites, subject to the usual limits of course enrollment and faculty approval. In the classroom, the school offers courses targeted to undergraduates as well as graduate-level courses where advanced undergraduates with a strong background in the life sciences are welcome. Among these offerings are many Stanford Introductory Seminars for freshmen and sophomores; interested students are encouraged to peruse the complete list of these offerings in the "Stanford Introductory Seminars" section of this bulletin or at <http://www.stanford.edu/group/introsems>.

## GRADUATE PROGRAMS

### M.S. AND PH.D. PROGRAMS

The School of Medicine is home to graduate programs covering a broad range of disciplines within biomedicine leading to Ph.D. or M.S. degrees. These programs focus on interdisciplinary training with in-depth investigation of an original problem of fundamental importance to biomedicine. Each degree program sets its own curriculum, but many courses are taught by groups of faculty from multiple programs and departments. Flexibility is a priority to ensure that all students obtain the best possible training for pursuing careers in their areas of interest. Admission is through one of about 15 home programs. These home programs enable students to carry out dissertation research and training with School of Medicine faculty, as well as investigators in the departments of Biological Sciences and Biophysics in the School of Humanities and Sciences. Detailed information on School of Medicine M.S. and Ph.D. programs, curricula, and research can be found at <http://med.stanford.edu/ms> and <http://med.stanford.edu/phd>. Application information may be obtained from Graduate Admissions, Office of the University Registrar, Stanford University, 630 Serra Street, Suite 120, Stanford, CA 94305-6032, or at <http://gradadmissions.stanford.edu>.

### M.D. PROGRAM

The School of Medicine seeks to attract students who are passionate about scholarship and wish to improve the health of the world's people through research, innovation, and leadership. The Stanford M.D. curriculum provides education in biomedical and clinical sciences along with study and independent research through scholarly concentrations. Emphasis is placed on interdisciplinary learning, with streamlined content and melding of basic science and clinical instruction across the curriculum. Blocks of unscheduled time allow for individual or group study, participation in elective courses, research, and reflection. Alternative pathways through the curriculum include an option of a fifth or sixth year of study as well as opportunities for pursuing a second degree, such as an M.P.H. or Ph.D.

Broad clinical science education occurs throughout the curriculum with exposure to patient care and the practice of medicine beginning on the first day of medical school. Students may begin clinical clerkships as early as May of the second year. A population health course combines classroom and experiential learning to provide understanding of the socioeconomic determinants of the health of patients and communities.

Scholarly concentrations offer opportunities for developing skills that enhance basic science and clinical training, fostering opportunities for research and innovation in areas such as bioengineering, biomedical ethics and medical humanities, biomedical informatics, clinical research,

community health, health services and policy research, and the molecular basis of medicine. Study in a scholarly concentration typically includes course work and research activities. There are structured opportunities to link scholarly concentration study with programs in clinical areas housed within centers at Stanford such as the Comprehensive Cancer Center, the Cardiovascular Institute, the Neuroscience Institute, the Institute of Immunity, Transplantation, and Infection, and Women's Health at Stanford. Traveling scholars projects may also be conducted overseas.

Students with interests in medical research as a career are encouraged to investigate opportunities available through the Medical Scientist Training Program (MSTP). Stanford also collaborates with the University of California, Berkeley, to offer students opportunities for M.D./M.P.H. training. Details about these programs may be found at [http://med.stanford.edu/combined\\_degree](http://med.stanford.edu/combined_degree).

Stanford is committed to representing the diversity of the U.S. and California populations by seeking a diverse body of students who are interested in the intellectual substance of medicine and committed to advancing the field of health care, broadly defined. Provided an applicant to the school has completed basic courses in physics, chemistry, and biology, the choice of an undergraduate major may reflect other interests, including the arts and humanities. Course work in advanced biology such as biochemistry, molecular biology, or genetics and the behavioral sciences is recommended because of their importance in understanding health care. Breadth of interests and depth of experiences play an important role in the selection of students from among those applicants having superior academic records.

The M.D. degree requires 13 quarters of full tuition; the joint M.D./Ph.D. degree requires 16 quarters. All additional quarters are charged at the reduced Terminal Medical Registration (TMR) tuition rate, which is \$2,081 per quarter in 2007-08. Completion of the M.D. degree must be achieved within six years, unless a petition is granted to extend this time frame. For further details on the M.D. degree, including admission requirements, see <http://med.stanford.edu/md>.

## MULTIPLE-DEGREE PROGRAMS

### MEDICAL SCIENTIST TRAINING PROGRAM

The Medical Science Training Program (MSTP) provides medical students with an opportunity to pursue an individualized program of research and course work leading to both the M.D. and Ph.D. degrees. It is designed to equip students for careers in academic investigative medicine, and emphasizes individualization of curricular and research programs for each trainee. Training for a combined M.D./Ph.D. should include the same content encountered by students who pursue each degree separately, but the total training time should be less than the sum of the time normally required for each degree. The flexible curriculum at Stanford University School of Medicine allows each student, in consultation with a preceptor and other advisers, to pursue a plan of study that satisfies the requirements for the M.D. degree and allows performance of doctoral-level research leading to the Ph.D. Students interested in joining the MSTP are considered for admission at the time of their application to the School of Medicine M.D. program and are asked to provide supplemental information relevant to their research background. Current Stanford M.D. students may also apply for admission to the MSTP. Further information regarding admission may be obtained from the MSTP administrator; details about the MSTP may be found at <http://mstp.stanford.edu>.

### MASTER OF SCIENCE IN MEDICINE PROGRAM

The Master of Science in Medicine program admits Ph.D. students who have a commitment to translational research, but are not interested in becoming clinicians. The goal of the program is to train researchers in human biology and disease so they are more able to translate new scientific discoveries into useful medical advances. Students offered admission into any Ph.D. program at Stanford may apply for admission to the master's program. During their first five quarters, students take basic biomedical science courses with Stanford M.D. students. The School of Medicine M.D. curriculum is presented in a succinct format that allows time for students to concurrently complete their Ph.D. course requirements and lab

rotations. By early in their second year, students choose a lab for their Ph.D. thesis research and complete their medical course work. They also elect a clinical mentor to discuss translational research needs and help to arrange a short clinical experience. Upon completion of the Ph.D., participating students receive an M.S. in Medicine. Details about the program can be found at <http://msm.stanford.edu>.

## COURSES

The following courses are open to undergraduates or graduate students. Additional courses may also be available; see <http://www.med.stanford.edu/education> for more information.

### STANFORD INTRODUCTORY SEMINARS

**MED 70Q. Cancer and the Immune System**—Stanford Introductory Seminar. Preference to sophomores. Myths and facts surrounding the idea that the immune system is capable of recognizing malignant cells. The biological basis and function of effector arms of the immune system; how these mechanisms may be used to investigate the biological basis and potential therapy of cancer. How the immune system functions. Write-2

3 units, Spr (Negrin, R)

**MED 86Q. Seeing the Heart**—Stanford Introductory Seminar. Preference to sophomores. Introduction to biomedical technology, science, clinical medicine, and public policy through cardiovascular imaging. Invasive and noninvasive techniques to detect early stage heart disease and to see inside the heart and blood vessels. Topics include: common forms of heart disease, how they develop, and why they affect so many people; imaging technologies such as ultrasound, CT, MRI, PET, and optical; a cost-effective public screening program. Field trips to Stanford Medical Center imaging centers.

1-2 units, Win (McConnell, M)

**MED 87Q. Women and Aging**—(Same as HUMBIO 87Q.) Stanford Introductory Seminar. Preference to sophomores. Biology, clinical issues, social and health policies of aging; relationships, lifestyles, and sexuality; wise women and grandmothers. Sources include scientific articles, essays, poetry, art, and film. Service-learning experience with older women. GER:EC-Gender

5 units, Win (Winograd, C)

**MED 88Q. Dilemmas in Current Medical Practice**—Stanford Introductory Seminar. Preference to sophomores. Social, political, scientific, and economic forces influencing medical practice. Spiraling costs, impaired access to health care, and disillusionment toward the health care system. Attempts by government and medical insurers to control costs through managed care and health maintenance organizations. Medical education and how it has affected the practice of medicine. Alternative health care, preventive medicine, and the doctor-patient relationship. The paradox of health in America: why do so many people who are healthy feel unhealthy? Optional observation of instructors in their medical practices.

3 units, Aut (Croke, J; Jones, H)

**MED 108Q. Human Rights and Health**—Stanford Introductory Seminar. Preference to sophomores. History of human-rights law. Topics such as: the health status of refugees and internally displaced persons; child labor; trafficking in women and children; torture; poverty, the environment, and health; access to clean water; domestic violence and sexual assault; and international availability of drugs. International conventions on human rights as background for social and political changes that could improve the health of groups and individuals. Optional opportunities to observe at sites where human rights and health are issues.

3 units, Win (Laws, A)

**MED 120Q. Pathophysiology of Diseases of the Heart and Blood Vessels**—Stanford Introductory Seminar. Preference to sophomores. Anatomic, physiologic, and pathologic states that comprise cardiovascular medicine. Anatomy and physiology of the heart and blood vessels as an introduction to pathologic states such as heart attack, stroke, congestive heart failure, rhythm disturbances of the heart, and sudden cardiac death. Underlying principles of diagnosis and treatment of the disease.

3 units, Spr (Stertz, S)

## UNDERGRADUATE AND GRADUATE

**INDE 183I/283I. Early Clinical Experience in International Family and Community Medicine**—(Graduate students register for 283I.) For preclinical medical students; undergraduates by special arrangement. Interactive early clinical experience with physicians, community leaders, health care workers, and patients in Mexico, India, China, or Tibet. Emphasis is on community health from local and global perspectives. Social, political, historical, and economic backgrounds of the country and local region. Non-western attitudes, beliefs and practices regarding health care, including herbal and other complementary medicine; local institutions and infrastructure including schools, social services, and the public health care system; and policies that impact health and the provision of care. Prerequisites: conversational Spanish for Mexico; for medical students, completion of first year; for undergraduates, junior standing or higher. Undergraduates apply through International Alliance in Service and Education (IASE) for Mexico; Volunteers in Asia (VIA) for Asian sites. Medical students apply through the Center for Education in Family and Community Medicine.

6-12 units, Aut, Win, Spr, Sum (LeBaron, S)

**INDE 199. Undergraduate Directed Reading and Research in Family and Community Medicine**—Interested students should contact the Center for Education in Family and Community Medicine administration. Prerequisite: consent of instructor.

1-18 units, Aut, Win, Spr, Sum (Staff)

**INDE 244. Ethnicity and Medicine**—Weekly lecture series introduces basic information about ethnic and cultural factors that impact patient care. Presents information about culturally sensitive health care services and addresses contemporary research issues involving minority and underserved populations. Topics include health care issues and indigenous medical practices of African Americans, Asians, Latinos, Native Americans, immigrants and refugees in both urban and rural settings. One unit for weekly lectures only; two units require additional discussions facilitated by course director; three units (non-medical graduate students and undergraduates) require weekly response papers and a research paper.

1-3 units, Spr (Garcia, R)

**INDE 245. Women and Health Care**—Lecture and seminar series. Topics of interest to women as health care consumers and providers. The historical role of women in health care; current and future changes.

1-2 units, Aut (Grudzen, M; LeBaron, S; Massion, C)

**INDE 247. The Theater of Illness**—The immediacy of disease and illness through descriptions of the human condition by playwright and actor. Mental illness, infectious disease, high technology, and end-of-life issues through plays and films from *King Lear* to *Angels in America*.

2 units, Spr (Zaroff, L)

**INDE 253. Rural Health with a Global Perspective**—Health status of the population, availability of health services and institutions, personal and environmental factors affecting health and medical care, and present and future models for change. Three-day field trip to San Joaquin Valley and mountain sites.

3-5 units, Spr (LeBaron, S; Jones, E)

**INDE 256. Current Controversies in Women's Health**—(Same as HUMBIO 125.) Interdisciplinary. Focus is on the U.S. Topics include: health research; bioethical, legal, and policy issues; sex and gender differences; scientific and cultural perspectives; social influences; environmental and lifestyle effects on health; and issues related to special populations. Prerequisite: Human Biology core or equivalent, or consent of instructor.

3 units, Spr (Jacobson, M; Stefanick, M)

**MED 147/247. Methods in Community Assessment, Evaluation, and Research**—(Graduate students register for 247.) Development of pragmatic skills for design, implementation, and analysis of structured interviews, focus groups, survey questionnaires, and field observations. Topics include: principles of community-based participatory research, including importance of dissemination; strengths and limitations of different study designs; validity and reliability; construction of interview and focus group questions; techniques for moderating focus groups; content analysis of qualitative data; survey questionnaire design; and interpretation of commonly-used statistical analyses.

3 units, Win (Fortmann, S; Kiernan, M)

**MED 199. Undergraduate Research**—Investigations sponsored by individual faculty members. Prerequisite: consent of instructor.

1-18 units, Aut, Win, Spr, Sum (Staff)

**MED 207. History of Medicine**—The development of Western medical tradition from Babylonian, Egyptian, and Greek cultures to the present.

1 unit, Win (Camargo, C)

**MED 217. Technological Frontiers in Digestive Diseases**—For engineering, bioengineering, and physical sciences students. Topics include: endoscopes to detect and remove cancer; minimally invasive surgery to treat obesity; measurements of propulsion through the intestine; and technologies to detect and stop internal bleeding. Observations in the clinical setting; visits to laboratories engaged in the development of new technologies. Technologies used in the clinical setting. 1 unit for lecture and observation only; 2-3 units for design and production of a medical device using Stanford's Product Realization Laboratory.

1-3 units, Spr (Lowe, A; Milroy, C)

**MED 228. Physicians and Social Responsibility**—Social and political context of the roles of physicians and health professionals' role in social change; policy, advocacy, and shaping public attitudes. How physicians have influenced governmental policy on nuclear arms proliferation; environmental health concerns; domestic violence; health and human rights; physicians in government; activism through research; the effects of poverty on health; and gun violence.

1 unit, Aut (Laws, A)

**MED 230. Rethinking International Health**—Issues and players that shape international health today. A road map for thoughtful, responsible action. Topics include: the role of the physician and health care worker; health as a human right; successful interventions; children's and women's health; issues in immunization; economic development; and NGOs. Online interviews with influential leaders in international health.

2-3 units, Win (Wise, P)

**MED 236. Psychosocial and Behavioral Health Interventions**—For medical students, graduate students and undergraduates with senior standing in Human Biology or Psychology. Contemporary theory and conceptual frameworks for psychosocial and behavioral change interventions as applied in the context of contemporary models of community medicine. The trans-theoretical model of behavioral change, contemporary behavioral, cognitive behavioral, social cognitive and acceptance-based models of behavioral change. Current models of emotion regulation, goal setting and attainment, and the impact of personality and characterological features on behavior and behavioral change. Application of theory in practicum based community clinic settings. Prerequisite: Stanford HIPAA training.

1 unit, not given this year

**MED 242. Physicians and Human Rights**—How human rights violations affect health. Topics include torture, domestic violence, regional conflict and health, sweat shops, rape, and war. Guest speakers.

1 unit, Win (Laws, A)

**MED 249. Medical Interpreting in Community Clinics**—Open to medical students, graduate and undergraduate students. Practical training to serve as a medical interpreter in the Arbor or Pacific Free Clinics, or in other area community health centers. Students must be bilingual. This is not language instruction, but instruction and discussion about the unique role of the medical interpreter in a community-based health care setting, required training in patient privacy, and skill-building. Unit credit also given for service hours in area clinics.

1-2 units, Aut, Win, Spr, Sum (Osterberg, L)

**MED 254. Applied Skill-Building in Clinical and Community-Based Research**—Skill-building via detailed individualized feedback from instructor on all aspects of research projects. Topics include: grant proposal preparation; study design; field implementation; data entry, analysis and interpretation; and conference abstract/manuscript preparation.

1-6 units, Aut, Win, Spr, Sum (Kiernan, M; Fortmann, S)

**MED 255. The Responsible Conduct of Research**—Forum. How to identify and approach ethical dilemmas that commonly arise in biomedical research. Issues in the practice of research such as in publication and interpretation of data, and issues raised by academic/industry ties. Debates at the interface of biomedical science and society regarding research on stem cells, bioweapons, genetic testing, human subjects, and vertebrate animals. Completion fulfills NIH/ADAMHA requirement for instruction in the ethical conduct of research. Recommended: research experience.

1 unit, Aut, Win, Spr (Karkazis, K)

**MED 256. Global HIV/AIDS**—(Same as HUMBIO 156.) Public health, policy, and research issues. Resources at Stanford and institutions such as government, NGOs, and pharmaceutical, advocacy, and international organizations. Sources include biomedical, social, and behavioral sciences. Student projects. Guest lectures.

3 units, Aut (Katzenstein, D)

**MED 257A,B,C. Patient Advocacy in Community Clinics**—Early clinical experience for pre-medical and medical students. Structured training and shadowing in preparation for a clinical role working with patients in community health clinics; the context of the work, populations served, and social role of physicians. Regular shifts at one of the course-affiliated clinic sites throughout the academic year. 1-2 units for students attending class meetings and performing clinic shifts. 3-4 units for a year-long, clinic-based project. Prerequisite: application.

1-4 units, A: Aut, B: Win, C: Spr (Garcia, G; Banchoff, A)

**MED 258. Advanced Patient Advocacy in Community Clinics**—Continuation of 257A,B,C for second-year students in Patient Advocacy Program; open to students who have worked in a clinical capacity in a community clinic setting. Skills training in areas such as health education counseling and group facilitation. Regular shifts at partner clinics. Students partner with clinic staff in developing and carrying out a service-learning or research project designed to meet the clinic's needs. May be repeated for credit. Prerequisites: 257A,B,C or consent of instructor.

1-3 units, Aut, Win, Spr, Sum (Garcia, G; Banchoff, A)

**MED 262. Economics of Health Improvement in Developing Countries**—(Same as ECON 127, HUMBIO 121.) Application of economic paradigms and empirical methods to health improvement in developing countries. Emphasis is on unifying analytic frameworks and evaluation of empirical evidence. How economic views differ from public health, medicine, and epidemiology; analytic paradigms for health and population change; the demand for health; the role of health in international development. Prerequisites: background in economics and statistics, and consent of instructor.

5 units, Win (Miller, N)

**MED 272A. Biodesign Innovation: Needs Finding and Concept Creation**—(Same as BIOE 374A, OIT 384, ME 374A.) Two quarter sequence. Strategies for interpreting clinical needs, researching literature, and searching patents. Clinical and scientific literature review, techniques of intellectual property analysis and feasibility, basic prototyping, and market assessment. Student entrepreneurial teams create, analyze, and screen medical technology ideas, and select projects for development.

3-4 units, Win (Yock, P; Zenios, S; Milroy, J; Brinton, T)

**MED 272B. Biodesign Innovation: Concept Development and Implementation**—(Same as BIOE 374B, OIT 385, ME 374B.) Two quarter sequence. Concept development and implementation. Early factors for success; how to prototype inventions and refine intellectual property. Lectures, guest medical pioneers, and entrepreneurs about strategic planning, ethical considerations, new venture management, and financing and licensing strategies. Cash requirements; regulatory (FDA), reimbursement, clinical, and legal strategies, and business or research plans.

3-4 units, Spr (Yock, P; Zenios, S; Milroy, J; Brinton, T)

**MED 275. Introduction to Biopharmaceutical Innovation**—Open to all students. Biotechnology and the pharmaceutical industry. Topics include the biopharmaceutical industry, historical trends, and experiences; research and development; intellectual property; drug approval: regulatory issues and agencies; business development; marketing; manufacturing; capital structure and financing; careers in biopharmaceutical industry. 3 units requires team project and final presentation. May be repeated for credit.

2-3 units, Win (Gardner, P)

**MED 276. Careers in Medical Technology**—Career tracks in biomedical technology for medical, life science, engineering, business, and law students. Guest industry professionals.

1 unit, Spr (Yock, P; Popp, R)

**MED 279Y. Interdisciplinary Design for Agile Aging**—(Same as CS 379Y, HUMBIO 131.) First of two quarter sequence; students may take 279Y without 279Z; offered by the d.school. Perspectives from computer science, design, social and behavioral sciences, physiology, geriatrics, and biodesign to develop projects that address the potential of people to maintain vitality and mobility as they age. New ways to integrate computer and device technologies with behavioral and social interventions. Focus is on small projects. Prerequisite: background in one of design, computing, medicine, behavioral sciences, communications, or business.

3-4 units, Win (Winograd, C; Winograd, T; Friedlander, A; Yock, P)

**MED 279Z. Design Project for Agile Aging**—(Same as CS 379Z.) Second of two quarter sequence; students may take 279Y without 279Z; offered by the d.school. Small teams develop projects that can have an impact in the world through products, programs, and practices that affect people's health on a broad scale. Technical interventions, social and contextual design, organizational contexts, and business and distribution issues. Limited enrollment. Prerequisites: 279Y, and master's level skills in one of design, computing, medicine, behavioral sciences, communications, or business.

3-4 units, Spr (Winograd, T; Winograd, C; Friedlander, A; Yock, P)

**MED 289. Introduction to Bioengineering Research**—(Same as BIOE 390.) Preference to medical and bioengineering graduate students. Bioengineering is an interdisciplinary field that leverages the disciplines of biology, medicine, and engineering to understand living systems, and engineer biological systems and improve engineering designs and human and environmental health. Topics include: imaging; molecular, cell, and tissue engineering; biomechanics; biomedical computation; biochemical engineering; biosensors; and medical devices. Limited enrollment.

1-2 units, Aut, Win (Taylor, C)

**MED 299. Directed Reading in Medicine**—Prerequisite: consent of instructor.

1-18 units, Aut, Win, Spr, Sum (Staff)

**MED 399. Graduate Research**—Investigations sponsored by individual faculty members. Prerequisite: consent of instructor.

1-18 units, Aut, Win, Spr, Sum (Staff)

**NSUR 278A. From Science to Business: Innovation in Neurologic Disease Beyond Neurosurgery**—For medical, business, and engineering students. The process of innovation and company building in the medical field, emphasizing the neurosciences. Overview of neurological diseases; business and regulatory aspects of device and biotech product development. Guest speakers on healthcare entrepreneurship. Venture capital and entrepreneurial mentors guide interdisciplinary student teams in evaluating a solution to an unmet clinical need or a project within a biotech company. May be taken for 2 units without the team project.

2-4 units, Win (Kallmeyer, V)

**NSUR 279. Concepts in Drug Delivery and Drug Device Combinations**—Open to all graduate students. Issues relating to drug-device combination products, including review of recently approved products such as cardiac stent), and development, regulatory, and reimbursement issues. Emphasis is on market evaluation, product development, and regulatory strategies. Lecture only for 2 units; project for 4 units.

2-4 units, (Kallmeyer, V) alternate years, not given this year

**ORTHO 222. Anatomy of Movement**—Perspectives include orthopedic surgery, neurology, mechanical engineering, computer science, anthropology, and art. Anatomy and pathology affecting the human locomotor system. Normal function and functional deficit from disease or injury. Engineering dilemmas that assist or emulate human movement, such as design of an artificial joint or simulation of tendon transfers for nerve palsy. The expression of human movement in art masterpieces and photography. The evolution of the hand as it became an instrument of purpose. Student team projects. Lecture only for 2 units; project for 4 units.

2-4 units, Win (Ladd, A; Rose, J)

**ORTHO 260. Tissue Engineering**—Biological principles underlying the use of engineering strategies and biocompatible materials for tissue repair and regeneration. Structure, physiology, and mechanics of articular cartilage, bone, and dense soft connective tissues. Current ideas, approaches, and applications being implemented as therapeutic regimens for arthritis, spinal deformities, and limb salvage. Multidisciplinary constraints on the design and creation of tissue constructs. Prerequisite: familiarity with basic cell and molecular mechanisms underlying tissue differentiation.

3 units, Win (Smith, R)

**PEDS 105/215. Health Promotion and the Campus Culture**—Multidisciplinary perspectives of public health and health psychology. The prevalence of health risk behaviors on the contemporary college campus and the challenges of risk reduction. Students apply theoretical frameworks to peer health promotion campus projects. Limited enrollment. Prerequisite: consent of instructor following first meeting.

4 units, Win, Spr (Friedman, I; Pertofsky, C)

**PEDS 216. Alcohol Issues and the Campus Culture**—Multidisciplinary perspectives of public health, health psychology, and sociology. The prevalence and scope of alcohol-related problems; challenges of risk reduction and intervention strategies. Students apply theoretical frameworks to alcohol-related research topics and projects. Limited enrollment. Prerequisite: consent of instructor following first meeting.

4 units, Win (Castro, R)

**PSYC 135/235. Sleep and Dreams**—Current research on how sleep affects our daily lives. Physiology of non-REM and REM sleep, dreams and dreaming, content, psychophysiological cause, lucid dreaming, sleep need, sleep debt, daytime alertness, and performance; biological clock and circadian rhythms; sleep disorders, insomnia, narcolepsy, sleep apnea, sleep-walking, jet lag, sleeping pills, sleep and mental illness, sleep and memory, and the impact of sleep deprivation and sleep disorders on academic and social life. Multimedia presentations, guest lectures, and projects.

3 units, Win (Dement, W)

**PSYC 230, Freud, Human Behavior, and Medical Care**—Seminar; applicable to all human behavior disciplines. The role of the unconscious in mental and physical functioning. Freudian psychology on mental functioning and its effect on the body and group behaviors. Topics include Freud's model of the mind, dreams, neurosis and psychosis, psychosomatic illness, eating disorders and addiction, and treatment options.

2 units, Win (Fisk, S)

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