SPRING 2007

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Freshman and Sophomore Seminars
University of California, Berkeley
301 Campbell Hall
Berkeley, CA 94720-2922

Freshman & Sophomore Seminars at Berkeley

UC Berkeley's Freshman and Sophomore Seminars provide an unparalleled opportunity for faculty members and small groups of lower-division students to explore a scholarly topic of mutual interest together, in the spirit of learning for its own sake. By taking a seminar a student becomes an active member of Berkeley's intellectual community. The seminars depend on the regular presence and active participation of every student. Sharing ideas in class is an important academic skill that can be acquired only through practice. The vigorous discussions that characterize the most successful seminars depend on the commitment of each and every member of the class. Students are encouraged to choose their seminars based on the pull of intellectual curiosity, a desire to explore enticing and even unfamiliar realms.

Please visit the Freshman & Sophomore Seminar website at http://fss.berkeley.edu for the following:

- Updates to the seminar lists included in this document on easy-to-follow web pages
- Revisions to this document
- Pop-up menus to help students find seminars of interest based on seminar topics
- Information regarding the Food for Thought Seminar series, a wonderful way for faculty and students to get better acquainted in an informal setting before or after class
- Success, Seminars, and You – a web page full of good ideas and helpful links to support students in registering for a seminar and getting the most out of their seminars before, during and after taking a seminar

L&S Discovery Courses

The seven-course breadth requirement can be an unparalleled opportunity to explore fascinating worlds of knowledge. The Letters & Science Discovery Courses, which the College is launching in fall 2005, will take the guesswork out of satisfying the breadth requirement. Taught by some of the most distinguished faculty on campus and deliberately designed to engage and ignite the minds of non-experts, these courses are destined to be unforgettable. For details on the Discovery Courses planned for the upcoming semester, see http://lsdiscovery.berkeley.edu.

This document was last updated on February 28, 2007.

FRESHMAN SEMINARS

The following courses, most of which are numbered 24, are limited to 15-18 students. Each is offered for one unit of credit. First-year students will be given priority for enrollment. Courses designated P/NP may be taken pass/no pass only; courses designated LG may be taken for a letter grade or on a pass/no pass basis. If a course is designated as requiring the consent of the instructor to enroll, or if you would like additional course information, contact the undergraduate assistant in the department offering the seminar.

Aerospace Studies 24, Section 1
The Foundation of the United States Air Force (1 unit, LG)
Professor Amber Henson
Wednesday 5:00-6:00, 122 Wheeler Hall, CCN: 57306

This course is designed to be an introduction to the Air Force Reserve Officers Training Corps and the Air Force . . . how it's organized, how it works, and how college students like yourselves can try out our program so you can see for yourself if the Air Force is for you. The topics we will be covering this term include leadership, core values, managing diversity, equal opportunity and treatment, team building, and communication skills. Most of these topics are a basic introduction to the Air Force and the military. **Enrollment in this seminar is by instructor approval only. To request approval, send an email to ahenson@berkeley.edu and tell the instructor why you are interested in taking the seminar no later than January 24, 2007.**

Lieutenant Amber Henson is a Manpower/Personnel Officer in the United States Air Force. She received her Bachelor's degree in Biology with a French minor from Samford University and her Masters in Health Science, emphasis in International Health, from Touro University.

African American Studies 24, Section 1
Researching "Mixed-Race" Identity and History in the United States (1 unit, LG)
Professor Stephen Small
Wednesday 10:00-12:00, 650 Barrows Hall, CCN: 00540

This seminar will meet week two through week eight of the semester, beginning January 24, 2007 and ending March 7, 2007.

People of mixed racial origins are one of the fastest growing populations in California, and across the USA. This course describes the various sources and methods available for studying the history and identity of people of various racial backgrounds, (including those of mixed Asian, Black, Chicano, Native American or white ancestry). We will review some of the main themes in writings about people of mixed racial origins; we will examine various sources for identifying mixed race populations, including census, biographies, literature and films; and we will consider various methods for carrying out research, including use of historical documents, interviews and analysis of images and representations. This course will equip students with basic research skills that can be utilized for other projects in African American Studies, Ethnic Studies, History, Sociology and Anthropology. We will watch a number of short videos and parts of films about people of mixed racial origins. Requirements include a number of short readings.

Dr. Stephen Small is Associate Professor and Chair in the Department of African American Studies where he teaches courses on Black Family, Research Methods, Globalization and Minority Communities, and People of Mixed Racial Descent (cross listed with Ethnic Studies). He has written several articles on people of mixed racial descent in England, the Caribbean and the USA, and is currently writing a book on Blacks of mixed racial descent in the Caribbean and the United States in the nineteenth century.

Anthropology 24, Section 1
Screening the Past: Analyzing Films about History and Archaeology (1 unit, P/NP)
Professor Ruth Tringham
Wednesday 11:00-12:00, 2224 Piedmont Avenue - Room 12, CCN: 02578

Students will learn to critically analyze how films, both feature and documentary, affect the way in which we view and approach the past. Movies have been a powerful medium for the last one hundred years, through which ideas about history and even deep prehistory have been projected to the broader public. However, their effect is still rarely subjected to closer scrutiny. In this class movies will be viewed by students outside class time. In class, movie excerpts will be watched and the films discussed. Students will learn how to analyze the films critically from the point of view of media literacy and film content rather than film technique. We will focus on the creators of the media (screenplay writers, directors, editors, and their archaeologist and historian consultants); the "reality" about the past that is created; the social and historical context of the films' creation; the impact of the films on their audiences in terms of their message about history; even movies about history for purposes of propaganda. To help in this endeavor students will watch not only matching documentary and feature movies (e.g. Iceman (1984) and Nova's (1998) Return of the Iceman), but also matching remakes of similar movies (The Mummy (1932) and The Mummy Returns (2001) that have different styles and messages. **This course is designed for any student who likes to watch films and wants to learn how to watch them with eyes wide open. The focus is on films about the past, so that any students hoping to major in history, anthropology (archaeology), Near Eastern history (esp. Egyptology), and Classical history would find it especially useful. The course would also be valuable for students hoping to major in Film Studies, Mass Communications, and Journalism, since it deals with the authorship, audience, and content of films, rather than techniques and styles of film-making.**

Professor Ruth Tringham is an archaeologist by training, specializing in the prehistory of Eastern Europe and, more recently, Turkey. Her practice of archaeology incorporates the innovative utilization of digital, especially multimedia, technology in the presentation of the process of archaeological research to the public. She regularly teaches courses about archaeology and the media, media literacy, and multimedia authoring in archaeology. This interest in multimedia grows out of a lifelong passion for music and puppets.

Astronomy 24, Section 1
Space, Time, and the Cosmos (1 unit, P/NP)
Professor Alex Filippenko
Thursday 12:40-2:30, 544 Campbell Hall, CCN: 06767

This seminar will meet for ten weeks. The seminar dates are January 18 and 25; February 1, 8, and 15; March 1, 8, and 15; April 5 and 12; and May 3, 2007. One of these eleven meetings will be cancelled, depending on Professor Filippenko's schedule. Enrolled students should also try to attend Stephen Hawking's public lecture or watch it via live feed at remote locations yet to be determined on March 13, 2007.

We will consider the nature of space and time, especially in the context of our understanding of the overall properties of the Universe. The major topics from the following two best-selling books will be discussed: "A Briefer History of Time," by Stephen Hawking, and "The Fabric of the Cosmos: Space, Time, and the Texture of Reality," by Brian Greene. Our journey will take us through the basics of the two pillars of modern physics: quantum mechanics and Einstein's general theory of relativity. We will also explore string theory, which attempts to unify these two great fields by postulating the existence of many hidden dimensions in which packages of energy vibrate. **Though the seminar is intended for non-science majors, the discussion will be held at a fairly high level; thus, students must have already successfully completed at least one of the following courses:**

Astronomy 10 (or C10), L&S C70U, Astronomy 7A, or Astronomy 7B. This seminar is part of the On the Same Page initiative: http://onthesamepage.berkeley.edu.

Alex Filippenko received his B.A. (1979, Physics) from UC Santa Barbara and his Ph.D. (1984, Astronomy) from the California Institute of Technology. After two years as a Miller postdoctoral fellow at UC Berkeley, he joined the faculty here. An observational astronomer who makes frequent use of the Hubble Space Telescope, the Keck ten-meter telescopes, and Lick Observatory, Filippenko engages in research on exploding stars, active galaxies, black holes, and the expansion of the Universe. He has also spearheaded efforts to develop robotic telescopes. His group's discovery that the expansion of the Universe may be accelerating with time was named the "Science Breakthrough of 1998" by the editors of Science magazine. Besides being an avid tennis player and hiker, he enjoys world travel and is addicted to total solar eclipses.

Chicano Studies 24, Section 1
Chicano Civil Rights Movement (1 unit, P/NP)
Professor Carlos Munoz Jr.
Monday 10:00-11:00, 235 Dwinelle Hall, CCN: 13006

The seminar will consist of examining the multifaceted dimensions of the 1960s Chicano Civil Rights Movement via documentary films.

Professor Carlos Muñoz, Jr. is a Professor Emeritus in the Department of Ethnic Studies. He is the award-winning author of Youth, Identity, Power: The Chicano Movement, and is working on a book on the topic of the seminar.

Classics 24, Section 1
Homer's 'Odyssey'–The Text and the Mythology (1 unit, P/NP)
Professor Anthony Bulloch
Thursday 4:00-5:00, 263 Dwinelle Hall, CCN: 14727

This seminar is a study of the 'Odyssey' in both the cultural and historical context of ancient Greece, and as a mythic language through which to explore issues of identity, gender, sexuality, community, individuality, responsibility, etc.

Anthony Bulloch is a Professor of Classics at UC Berkeley. He was a Fellow, Dean and Classics tutor at King's College in Cambridge and has authored books and articles on various authors and texts in the ancient Greek world.

Classics 24, Section 2
Ancient Greek Tragedy in Modern Performance (1 unit, P/NP)
Professor Mark Griffith
Monday 4:00-5:30, 262 Dwinelle Hall, CCN: 14730

We will read five or six Classical Greek tragedies in English, and watch video recordings of some modern productions of them. Discussion will focus on differences of acting style, scenic and costume design, and performance space, as well as the use of music and dance, in comparing various approaches that modern directors have taken to adapting these plays to a contemporary context.

Mark Griffith is a Professor of Classics and of Theater, Dance, and Performance Studies. His publications have focused primarily on Greek tragedy.

Classics 24, Section 3
Indiana Jones and the Elgin Marbles:
The Myth and Reality of Archaeology (1 unit, LG)
Professor Kim Shelton
Wednesday 12:00-1:00, 279 Dwinelle Hall, CCN: 14733

Food for Thought dining arrangements will be discussed in class.

What does someone need to be an archaeologist? A pith helmet? A leather jacket? A whip? Hollywood would like us to believe that treasure-hunting heroes are searching for treasure and saving the world in one of the most adventurous and romantic careers possible–archaeology. The reality is something quite different but even more interesting. Archaeology is the study of the human past, a window into the cultures and times from which the world of today developed. With insight into the lives of the ancients we learn a tremendous amount about ourselves and our future potential. Today archaeology is about history, art, science, cultural heritage and international law. To be an archaeologist you need to be inquisitive, imaginative and incredibly enthusiastic–especially about holding a simple object that someone dropped hundreds or thousands of years ago and using your mind like a time machine to meet that individual in the context of his life. This seminar will be an opportunity to analyze the romantic legends, figures and stereotypes of archaeology and to discover the exciting real elements and adventures of today's archaeologist. **This seminar is part of the Food for Thought Seminar Series.**

Kim Shelton is a faculty member in the Department of Classics and the Director of the Nemea Center for Classical Archaeology. She has two excavation projects in Greece, including the UC Berkeley Excavations at the Sanctuary of Zeus at Nemea and at the prehistoric Bronze Age site of Mycenae. She began excavating at a very young age and has never looked back. Her experience includes field work in this country as well as twelve years of full-time research in Greece. Other important personal facts include her cats named after famous archaeologists and her favorite Halloween costume - what else? Indiana Jones, whip and all. For more information regarding Professor Shelton, please visit her faculty web page at http://shelton.berkeley.edu.

Earth and Planetary Science 24, Section 1
Earthquake Prediction and the Myth of Solid Ground (1 unit, P/NP)
Professor Roland Burgmann
Monday 3:00-4:00, 401 McCone Hall, CCN: 19032

As a scientist studying earthquake deformation, Professor Burgmann is invariably asked if earthquakes can be predicted. The short answer continues to be "No." In this seminar the (few) successes and (many) challenges to earthquake prediction will be explored. The Myth of Solid Ground: Earthquakes, Prediction and the Fault Line Between Reason and Faith by David Ulin will be used as a guide through the scientific and non-scientific aspects of the topic. Some of the topics mentioned in the book will be explored more deeply by reading related research papers and seeking dialogue with some of the scientists featured in the book.

Professor Roland Burgmann did his undergraduate studies in geology in Tuebingen Germany, followed by an M.S. degree from the University of Colorado at Boulder and Ph.D. work at Stanford University. During his studies his interests evolved from a focus on structural geology and tectonics towards active tectonics and geodetic measurements of earthquake deformation. This may well have been prompted by the occurrence of the 1989 Loma Prieta earthquake during his first few weeks at Stanford. Professor Burgmann taught for three years at UC Davis before coming to Berkeley in 1998. His recent research projects focus on the active earthquake cycle and post-earthquake deformation in northwest Turkey, in the Mojave Desert, California, along the Denali fault, Alaska, and in southeast Asia following the great 2004 Sumatra earthquake. He also integrates deformation and seismic data towards an improved understanding of active deformation from major faults in the San Francisco Bay area.

Earth and Planetary Science 24, Section 2
Our Thirsty Earth (1 unit, P/NP)
Professor Chi-Yuen Wang
Monday 2:00-3:00, 401 McCone Hall, CCN: 19033

The search for fresh water is a problem as old as civilization. Despite the advancement in modern technology, the availability of fresh water remains a critical problem throughout the world and has become worse in many areas. Prediction goes that water will be the oil of the twenty-first century, will shape national economies and geopolitical alliances, and may even cause wars. In this seminar we will survey the shortage of fresh water as an environmental problem in various parts of the world, we will discuss the current efforts undertaken by communities and nations in combating this problem, and we will discuss possible solutions. **Students who are concerned about the shortage of fresh water as an environmental problem of the planet earth and want to know more about the problem and the current effort in combating this problem are encouraged to enroll.**

Chi-Yuen Wang is a Professor of Geophysics in the Department of Earth and Planetary Science. For many years, he has done research on the various aspects of hydrogeology and has taught an upper-division course on Hydrogeology and a graduate level course on Problems in Hydrogeology.

Energy and Resources Group 24, Section 1
The Science, Technology, Regulation, and Politics of Air Pollution–a California Perspective (1 unit, P/NP)
Professor Robert Sawyer
Friday 2:00-4:00, 323 Barrows Hall, CCN: 27402

This seminar will meet for two hours on six Fridays plus two field trips on dates to be determined.

California experiences the nation's worst air quality. Its innovative regulatory program is a model for the nation and the world. This seminar examines current California air pollution issues including health-based air quality standards and their attainment, who did kill the electric car, growth-eroding emissions reduction, motor vehicles that clean the air, and California's role in addressing global warming. The seminar requires a short paper and presentation. **Enrollment is limited to twelve students. Students from a broad range of disciplines are encouraged to enroll.**

After forty years on the Berkeley faculty, Professor Sawyer, the Class of 1935 Professor of Energy Emeritus, accepted the appointment of Governor Schwarzenegger to head California's air quality control agency, the California Air Resources Board. While at Berkeley his teaching and research focused on air pollutant formation and control, motor vehicle emissions, energy and environment, and regulatory policy. This seminar is an unusual opportunity to explore air pollution issues with a professor who also leads California's regulatory program. For more information regarding Professor Sawyer, visit http://www.me.berkeley.edu/faculty/sawyer/ and http://www.arb.ca.gov/board/chair.htm.

Engineering 24, Section 1
Time, Money, and Love in the Age of Technology (1 unit, P/NP)
Lecturer Americ Azevedo
Monday 1:00-2:00, 41 Evans Hall, CCN: 27615

Many people in technological societies complain of "time poverty." What are the real relationships between time, money, and love in our lives? Where is love in a world dominated by the technological paradigm? Is there a balance to be found? Does technology make us happy? What is the good life? How can we cultivate peace of mind in a world of rapid change? These and other fundamental questions will be at the heart of a semester-long Socratic dialogue. **This seminar is for engineering, business, and**

liberal arts students and is part of the On the Same Page initiative: http://onthesamepage.berkeley.edu.

Americ Azevedo has pursued a life-long study of world religions and spirituality, along with a continued commitment to Socratic & Bohmian dialogue. Though his background is in Philosophy, his business and teaching career have brought him extensively into the world of information technology, with an emphasis on collaborative technologies, e-learning, and their cultural implications. He is especially concerned with how we can maintain our humanity in an increasingly technological world. He has been at U.C. Berkeley since Fall 2000, and is currently teaching Time, Money, and Love in the Age of Technology (Engineering 24, section 1) and Introduction to Computers (IDS 110).

Engineering 24, Section 1
Gadgets Electrical Engineers Make (1 unit, LG)
Professor Jeffrey Bokor
Wednesday 10:00-11:00, 125 Cory Hall, CCN: 25238

This seminar is intended to offer a taste of how the hardware that is powering the information age really works. Electrical engineers must invest considerable effort to learn their science and math fundamentals. Eventually, though, the fun comes in building innovative and practical gadgets. We will side-step the science and math and get right into the hardware. We'll take a look at what's inside some of today's most exciting products and technology as well as look ahead at the future products that are just around the corner. Our focus will be on hardware and we will see how much fun engineers can have using their hands other than by typing on a keyboard.

Jeffrey Bokor received the B.S. degree in electrical engineering from the Massachusetts Institute of Technology in 1975, and the M.S. and Ph.D. degrees in electrical engineering from Stanford University in 1976 and 1980, respectively. From 1980 to 1993, he was at AT&T Bell Laboratories where he did research on novel sources of ultraviolet and soft X-ray coherent radiation, advanced lithography, picosecond optoelectronics, semiconductor physics, surface physics, MOS device physics, and integrated circuit process technology. He held management positions as head of the Laser Science Research Department at Bell Labs in Holmdel, NJ, from 1987 to 1990, and head of the ULSI Technology Research Department at Bell Labs in Murray Hill, NJ, from 1990 to 1993. Dr. Bokor was appointed Professor of Electrical Engineering and Computer Sciences at the University of California at Berkeley in 1993, with a joint appointment at the Lawrence Berkeley National Laboratory (LBNL). In 2004, he was appointed as Deputy Director for Science at the Molecular Foundry at LBNL, a major new nanoscale science research center. His current research activities include novel techniques for nanofabrication, new devices for nanoelectronics, quantum information processing, extreme ultraviolet lithography, optical metrology, and Fourier optics. He is a fellow of IEEE, APS, and OSA.

English 24, Section 1
The Arts at Berkeley (1 unit, P/NP)
Professor Charles Altieri
Wednesday 11:00-12:00, 123 Dwinelle Hall, CCN: 28093

The goal of the course is to help students to feel confident in talking about the arts and to take pleasure in that confidence, as well as to feel at home in the various venues that exhibit art and performance at Berkeley. We will discuss how best to look at and interpret works of visual arts exhibited at the Berkeley Art Museum; we will attend dance and theater events at Cal Performances, and we may include something in the city. For all events on campus we usually can give students 75% off standard admission prices. Students will be expected to produce one-page reviews of some aspect of performances and they will lead the class in discussing some work of visual art. **Students interested in a variety of arts are encouraged to enroll in this seminar.**

Charles Altieri is a Professor of English who specializes in twentieth-century American literature and literature and the visual arts. He is also former director of the Consortium for the Arts on campus, a unit devoted to developing conversations among the arts.

English 24, Section 3
Reading Walden Carefully (1 unit, P/NP)
Professor Mitchell Breitwieser
Monday 4:00-5:00, 31 Evans Hall, CCN: 28837

We will read Thoreau's Walden in small chunks, probably about thirty pages per week. This will allow us time to dwell upon the complexities of a book that is much more mysterious than those who have read the book casually, or those who have only heard about it, realize. We will also try to work some with online versions of the book, using the wordsearch command to identify words such as "woodchuck" or "root" that reappear frequently, in order to speculate on patterns Thoreau is trying to establish. Regular attendance and participation, along with a loose five-page essay at the end, are required.

Mitchell Breitwieser has taught American literature in the Berkeley English department for twenty-five years.

Environmental Economics and Policy 24, Section 1
Innovation in Agriculture, Natural Resources and Biotechnology:
An Economic Perspective (1 unit, P/NP)
Professor Brian Wright
Thursday 4:00-5:30, Unit 1 Central Downstairs Classroom L0020, CCN: 01217

This seminar will meet for ten weeks, beginning January 18, 2006 and ending March 22, 2006. The schedule is designed to give students more time for other courses after Spring Break. The Food for Thought dining arrangements will be discussed in class. Students will be expected to come to dinner after their presentation and at least one other time during the course.

This class addresses economic aspects of research, innovation and exploration with emphasis on problems related to agriculture, natural resources and biotechnology. We shall consider the role of intellectual property rights and other means of motivating research, and the implications of recent international policy changes including the TRIPS agreement of the World Trade Organization and international commitments under the Conference on Biodiversity. Topics of interest will include the history of bioprospecting and the Mutiny on the Bounty; debt for nature swaps - a good idea?; TRIPS, international patent policy harmonization and access of poor people to essential drugs; returns to agricultural research, including the Green Revolution; the disruptive effects of innovations: a comparison of the introduction of coffee and of genetically modified food; how can public universities handle a world of intellectual property rights?; prizes past and present: food canning, vaccines and Will Masters' prize initiative for African agricultural innovation; open source innovation: agriculture, software and the Biobricks initiative; genetically modified crops: Bt cotton in India, China and the United States; and research ethics, independence and the influence of funding–the great margarine controversy, and the "Novartis Agreement" with the College of Natural Resources. **A lively interest in research, exploration and innovation is required, but introductory economics is not. This seminar is part of the Food for Thought Seminar Series.**

Brian Wright became interested in agriculture and natural resources when working on his family sheep station in Australia. He is a graduate of the University of New England, Armidale, Australia, and has a Ph.D. in Economics from Harvard University. He then was Assistant and Associate Professor in the Yale University Economics Department, and is currently Professor of Agricultural and Resource Economics at the University of California, Berkeley. His research interests include the economics of commodity storage, speculation and market stabilization, agricultural policy, the economic dynamics of research incentives

including their implications for industrial structure, and the economics of conservation and innovation of genetic resources. He recently served on a Natural Academies Committee on Intellectual Property in Genomic and Protein Research and Innovation (http://www.nap.edu/catalog/11487.html).

Environmental Science, Policy, and Management 24, Section 1
Discussions on Evolutionary Biology (1 unit, P/NP)
Professor Philip Spieth
Wednesday 3:00-4:00, 2523 Tolman Hall, CCN: 29133

Discussions on Evolutionary Biology is a seminar for freshmen that explores the intellectual excitement of evolutionary biology and examines its significance for understanding the world we live in. Weekly readings and roundtable discussions introduce basic facts and principles of evolutionary biology, including both historical perspectives and contemporary issues. Attention is given to popular misconceptions of biological evolution.

Philip T. Spieth is an Emeritus Professor in the Department of Environmental Science, Policy, and Management who worked with computer models of evolution and studied genetic variation in natural populations of fungi. He joined the faculty of the former Department of Genetics in 1971 and taught population genetics for thirty years at UC Berkeley in both introductory genetics courses and in courses for advanced undergraduates and graduate students and has been a co-author of a general genetics textbook. He created and has taught Discussions on Evolutionary Biology since the inception of the freshman seminar program in the early 1990's. Currently he works with the National Center for Science Education, a nonprofit organization devoted to the teaching of evolutionary biology in public schools.

Environmental Science, Policy, and Management 24, Section 2
Issues in Natural Resource Conservation (1 unit, P/NP)
Professor David Wood
Friday 9:00-10:00, 106 Mulford Hall, CCN: 29136

There is one optional field trip to a Bay Area location on a Saturday from 8:00 am to 3:00 p.m. to be arranged.

Some of the issues to be dealt with include management and preservation of timberlands; reducing fire risk through logging; management in wilderness areas; endangered species; importation and exportation of logs; the lives of John Muir and Gifford Pinchot; trees and religion; can rain forests be saved?; killer bees; coral reefs—human threat; jobs versus spotted owls; vegetarianism; Muir Woods, past and present; garbage in the United States; biofuels; solar power; airport expansion in the San Francisco Bay Area; the competition for water; global warming; and many more topics to be selected by the students.

Professor Wood's research interests include host-selection behavior of forest insects, chemical ecology, the biology and ecology of bark beetles, forest pest management, the biodeterioration of wood by insects, and insect/pathogen/tree interactions.

Environmental Science, Policy and Management 24, Section 3
Evolutionary Biology: Controversy and Consensus (1 unit, P/NP)
Professor Patrick O'Grady
Thursday 2:00-3:00, 107 Mulford Hall, CCN: 29139

All living things are the direct result of evolutionary processes acting over the course of millions of years. Natural selection, mutation, random genetic drift, and other forces act at all levels of biological organization (genes, individuals, populations, species, and ecosystems) to generate and maintain the dazzling biodiversity we see on our planet. Understanding the basic tenets of evolution is essential not only for having an appreciation for the biological sciences, but for appreciating all life. At this point in

time, when more species are going extinct than ever before and we face a global biodiversity crisis, it is critical that we understand evolutionary biology because it is the only way to preserve our vanishing biodiversity. Furthermore, because of rapid advances in biotechnology, we are becoming able to direct, either actively or inadvertently, the evolution of many species on our planet. As members of society, it is essential that we understand the arguments both for and against evolution and are able to discuss these matters in a cogent, scientifically sound manner. Developing scientific and evolutionary literacy will allow individuals to make informed, well reasoned decisions about biodiversity management, medicine and disease, genetically modified food, and science education in an increasingly complex world arena.

Professor Patrick O'Grady is interested in the patterns and processes that generate and maintain biological diversity. Research projects in his laboratory cover a range of biological disciplines including morphology and taxonomy, phylogenetic systematics, population genetics, molecular evolution and genomics to examine the evolutionary history of the endemic Hawaiian Drosophilidae. For more information regarding Professor O'Grady, please visit http://nature.berkeley.edu/ogradylab/.

German 24, Section 1
Love and Passion (1 unit, P/NP)
Professor Niklaus Largier
Tuesday 3:00-4:00, 103 Wheeler Hall, CCN: 37466

We speak of love in many ways: as a passion that carries us away, as a force that makes us better, as something divine, and as something highly enjoyable (among other things). In this course we will read short classical texts that try to elaborate on the nature of love (Plato and Ovid), as well as a series of love poems and contemporary songs.

Niklaus Largier is currently chair of the German department. After studying German, Russian, and Philosophy in Zurich and Paris, Professor Largier received his Ph.D. from the University of Zurich in 1989. His research deals with the history of medieval and early modern German literature, especially questions of the relations between religious practices, eroticism, and the literary imagination. For more information regarding Professor Largier, please visit http://german.berkeley.edu/people/showprofile.php?id=9.

History of Art 24, Section 1
Classic Movies as Visual Art (1 unit, P/NP)
Professor David Wright
Wednesday 2:00-5:00, 150D Moffitt, CCN: 05466

This seminar will meet only during the first twelve weeks of the semester. Attendance at the first class is essential.

This seminar will devote twelve Wednesday afternoons to looking thoughtfully at Classic Movies, treating them as visual art, analyzing particularly the camera work and editing, also the staging and lighting, always seeking to understand how these aspects contribute to the total expressive effect of the movie. Each week one movie will be analyzed closely and students will write a brief report on a specific aspect of it. Usually extracts of another movie or shorts will also be shown, to expand students' knowledge of the medium. The movies analyzed will range from The Last Man (Germany 1924) to Bicycle Thieves (Italy 1949), all of them general release movies widely seen in their time. The movies will be projected on a large screen, normally from DVD, allowing us easily to go back to specific episodes for detailed analysis and discussion. No reading expected; there will be no other written work. **This seminar is part of the On the Same Page initiative: http://onthesamepage.berkeley.edu.**

David H. Wright has been a devoted still photographer since childhood and continues to make all the slides for his lectures (which are mostly on Rome and the Dark Ages), but he completed the undergraduate requirements in Physics at Harvard in 1949 and now is trying to understand enough of

Hawking's Briefer History of Time to connect it with our discussions of time in the movies, particularly the artificial time that can be constructed by editing the film.

Integrative Biology 24, Section 1
The Darwinian Revolution (1 unit, LG)
Professor Brent Mishler
Thursday 10:00-11:00, 5053 Valley Life Sciences Building, CCN: 43003

The Darwinian Revolution was one of the greatest upheavals in human thought, involving the very basis of our self-awareness: Where did we come from? What is or should be the basis for our ethics and social behavior? Where are we going? Topics to be considered include: historical antecedents of Darwin's theories; the scientific evidence for evolution and natural selection; the impact of Darwinism on religion, social theory, and ethics; later scientific developments and recent challenges by latter-day creationists. The goal is to use these interdisciplinary topics as an exemplar of scientific methods and change, and of the unsteady relationship between science and the public. In addition to attending and participating in each week's lecture/discussion, each student will be required to write a short paper (five pages maximum) due at the end of the semester.

Brent Mishler is Professor in the Department of Integrative Biology and Director of the University and Jepson Herbaria. His research interests are in the systematics and evolution of plants, especially mosses. His lab applies methods ranging from microscopy and computer-assisted morphometrics, through tissue culture and DNA sequencing. He is also interested in the theory of systematic biology, as well as the philosophy and history of science.

Integrative Biology 24, Section 2
Animal and Human Navigation: Which Way Is Home? (1 unit, LG)
Professor Roy Caldwell
Monday 2:00-3:00, 5192 Valley Life Sciences Building, CCN: 43006

A homing pigeon can return to its loft after being shipped one thousand km to a place it has never been. A whale spends its summers in the Bering Sea and its winters near Maui. A female sea turtle returns for the first time to a beach where she hatched thirty years earlier to lay her own eggs. A Monarch butterfly flies south two thousand km to spend the winter in a secluded grove in central Mexico. A limpet returns forty cm to a favorite depression in a rock. The abilities of animals to navigate have intrigued biologists for decades. We will read a series of papers describing how animals navigate and how they use such methods as landmarks, celestial cues, and geomagnetic fields to determine where to go and what route to follow. We will also attempt to replicate experiments that suggest that humans are able to navigate using geomagnetic fields. At the end of the semester, each student will be required to write a short review paper discussing navigation and orientation by an animal of his or her choice. **This seminar is designed for students with a general interest in animal biology and more specifically animal behavior. Registration for this seminar is by instructor approval only. Interested students should put their names on the waitlist and then attend the first class meeting.**

Roy Caldwell is a Professor of Integrative Biology with a background in insect migration and marine invertebrate animal behavior.

Integrative Biology 24, Section 3
How and Why Do Birds Sing? (1 unit, P/NP)
Professor George Bentley
Tuesday 2:00-3:00, 5053 Valley Life Sciences Building, CCN: 43009

Do you ever wonder why some birds sing and others just call? Would you like to know how songbirds produce such melodious tunes? What about the dawn chorus? Sexual attraction? Aggression? It's just the day-to-day life of songbirds. Come and learn about the anatomy and physiology of birdsong, from the specialized organs to highly evolved brains. Find out how bird song can cause hormones to surge. This seminar will cover the hows and whys of vocal communication in birds with an emphasis on what classic and cutting-edge research has taught us.

George Bentley received his B.Sc. in biology (1993), and his Ph.D. in zoology (1996) at the University of Bristol in the United Kingdom. Following receipt of his doctorate, Dr. Bentley joined the Behavioral Neuroendocrinology Group at Johns Hopkins University, initially as a postdoctoral fellow and later as an associate research scientist. In January 2000, Dr. Bentley moved to Professor John Wingfield's laboratory at the University of Washington as a research associate in the Departments of Psychology and Biology. Dr. Bentley moved to Berkeley in June of 2005, where he is an Assistant Professor in the Department of Integrative Biology and his lab focuses on how the brain detects environmental cues and turns them into hormonal signals. These signals in turn affect the behavior and physiology of the organism itself, or organisms to which the behavior is directed. For example, a male bird's song can cause a female to solicit copulation and change her hormonal status. Exactly how the brain performs this feat is largely unknown, but birds are an excellent model for this type of research as they have extravagant auditory and visual displays. The research in Dr. Bentley's lab is mostly performed on birds, but is not limited to this vertebrate class. Current projects in the lab involve sheep, horses, rats, mice, hamsters and humans; many of these projects are in collaboration with other labs around the world (Japan, New Zealand, Germany, United Kingdom). Undergraduates are especially encouraged to get involved in active research projects. Currently, there are nine undergraduates working in the Bentley lab on neuroendocrine mechanisms of regulation of reproduction and on the neural basis of song behavior. For more information regarding Dr. Bentley, visit http://http://ib.berkeley.edu/research.orig/interests/research_profile.php?person=112.

Integrative Biology 24, Section 4
Humans Evolving (1 unit, LG)
Professor Leslea Hlusko
Wednesday 3:00-4:00, 4110 Valley Life Sciences Building, CCN: 43012

In this seminar we will read and critically review a recently published non-fiction book written for the general public about human evolution / human biology. Each week we'll read and critically evaluate a chapter. Students will also be asked to do research into sections of the book to further evaluate the author's claims and interpretations. The goals of the course are 1) to develop the critical thinking skills needed to understand biology as it is presented to the general public, and 2) to develop the skills needed to maximize one's undergraduate experience here at UC Berkeley.

Professr Leslea Hlusko is interested in the genetic basis of mammalian skeletal variation and evolution with a focus on primates. Her research includes paleontological field projects in Tanzania and Ethiopia as well as genetics research done in collaboration with the Southwest Foundation for Biomedical Research. As such, she approaches human biology from the perspectives of paleontology and biomedicine. This is her third year as a Professor in the Department of Integrative Biology here at Berkeley. She received her undergraduate degree from the University of Virginia and a Ph.D. from Penn State University. Professor Hlusko was a Professor at the University of Illinois for four years before moving to Berkeley. Please feel free to check out her lab web site for more information on her research, academic training, and the students in her lab. The website address is http://ib.berkeley.edu/labs/hlusko/.

Integrative Biology 24, Section 5
Plants of the UC Botanical Garden (1 unit, LG)
Professor David Ackerly
Wednesday 12:30-2:45, UC Botanical Garden, CCN: 43015

This seminar will meet for seven weeks: February 14 and 28; March 7, 14 and 21; April 4 and 18, 2007. The class will meet at 12:30 at the Hearst Mining Circle to take the shuttle bus to the Botanical Garden each seminar meeting.

The UC Botanical Garden is home to thousands of wild-collected plant species from all over the world. In this seminar, we will visit the garden each week to examine the plants from a different biome of the world, including California, the New World deserts, temperate forests, the tropics, and more. Based on our observations, we will pose questions about the diversity of plant form and function: why are some leaves small and others big? Why are desert plants often succulent? Why do some plants drop their leaves in winter or summer? Our goal is to learn how scientists turn such simple observations into hypotheses and research projects, and at the same time to enjoy the great diversity of the Botanical Garden's plant collection. **This class is aimed at anyone with an interest in plant diversity, and will provide a great introduction for potential Integrative Biology majors. The course is not focused on horticulture or gardening.**

Professor Ackerly joined the faculty at UC Berkeley in 2005. His research focuses on the ecology and evolution of plant diversity, focusing on the form and function of woody plants. He has worked in temperate and tropical forests of New England, Japan, Brazil and Mexico, and currently focuses his research on the flora of California. For more information regarding Professor Ackerly, visit http://ib.berkeley.edu/labs/ackerly/index.html.

Integrative Biology 24, Section 6
Conserving Wildlands in the Wake of Global Warming (1 unit, P/NP)
Professor Anthony Barnosky
Monday 11:00-12:00, 4110 Valley Life Sciences Building, CCN: 43017

The issue of global warming is politically charged and has widespread scientific and economic implications. Through movies, popular books, and primary scientific literature we will examine the ecological ramifications of global climate change, the value of Earth's few remaining wildlands, and the problems encountered in bringing sound science to policy makers and the public. **This seminar is for students who want to be exposed to a broad spectrum of ecological issues, and learn how science can impact (or be overridden by) political decisions.**

Anthony Barnosky is a Professor of Integrative Biology, Curator in the Museum of Paleontology, and Research Paleoecologist in the Museum of Vertebrate Zoology. His research focuses on using the paleontological record to understanding the effects of environmental changes on ecosystems. For more information regarding Professor Barnosky, visit http://ib.berkeley.edu/labs/barnosky/adbprofile.htm.

Integrative Biology 24, Section 7
Evolution and Intelligent Design (1 unit, LG)
Professor Kevin Padian
Wednesday 12:00-1:00, 5192 Valley Life Sciences Building, CCN: 44173

What is "Intelligent Design" and how does it relate to concepts of biological evolution? Why has the scientific community rejected ID, why did it fail in Federal court, and what are its proponents really saying? What is the evidence for evolution, how is it structured, and why does it present philosophical and theological problems for so many Americans? What are the different levels of discourse about this issue that pervade American life? This seminar is about science and faith, belief systems, approaches to knowledge, rationality and fundamentalism. Each student will read one book explaining evolution and one

explaining intelligent design, in addition to other things. Some of these materials will be distributed for reading over winter break. Attendance and vocal contributions are expected on a weekly basis. Views of all participants are to be respected at all times. **Enrollment in this seminar is by instructor approval only. If you would like to participate, please send a statement of no more than 1/2 a page to kpadian@berkeley.edu explaining "why I want to take IB 24" with that as the subject line. Professor Padian will be accepting students until the class fills up. Freshmen only. No waiting list. Those not present for the first day of class will be struck from the roll. Committed evangelicals, atheists, and postmodernists are welcome, but they must all be willing to examine their beliefs frankly and in a scholarly fashion. This class must be taken for a letter grade.**

Kevin Padian would like to play first base for the Oakland A's, but he is over the hill for that one. Instead, he spends his time doing research on how new major evolutionary changes and adaptations get started. Part of his focus is on the Age of Dinosaurs; in addition to being a professor in IB, he is a curator in the Museum of Paleontology. Last year he served as an expert witness at the "intelligent design" trial in Dover, Pennsylvania.

Integrative Biology 24, Section 8
Recent Climate Change: The Scientific Evidence and Impacts on Global Ecosystems (1 unit, P/NP)
Professor Thomas Powell
Wednesday 2:00-3:00, 4110 Valley Life Sciences Building, CCN: 44176

In this seminar we will address climate forcing, the changing chemistry of the atmosphere, past and future climates, and evidence for change in the earth's ecosystems. We will focus our discussions around 1) measurement and estimation, 2) stability and balance, 3) effects of hypothesized natural phenomena, and 4) social effects and controls.

Professor Thomas M. (Zack) Powell is an oceanographer with interests in plankton ecosystems in the coastal and deep ocean. His research has focused on physical mechanisms like mixing, transport via currents, turbulence and diffusion, etc. that influence plankton populations in the sea. His laboratory is involved in the construction of computer models of the coupled biological/physical processes that govern spatial and temporal changes in the ocean. For six years Powell chaired the Scientific Steering Committee of US GLOBEC, a program within the US Global Change Research Program that seeks to determine the impact of global change upon populations of marine animals, including living marine resources.

Journalism 24, Section 1
Central America and the Journalist as Fact Checker (1 unit, LG)
Professor Lydia Chavez
Wednesday 12:00-1:00, 127 North Gate Hall, CCN: 48003

This is a course that accompanies a long-form writing class for graduate students who are working on a book on Central America. Each freshman in the class will be attached to a piece by a graduate student and will be responsible for fact checking the piece. The first part of the class will be background and an overview on Central America during the 1980s when the U.S. military was involved in the Central American wars. The second part of the class will look at long-form narratives and how they are written. The final part of the class will involve fact checking your assigned piece. Fact checking is often an entry-level job at magazines--early in my career I was a fact checker at Time and Esquire. **Enrollment is limited to twelve freshmen. Students enrolling in this seminar should note that the focus of this seminar is not all journalism.**

Lydia Chavez, a former reporter for The New York Times, has written books and articles on affirmative action, Cuba and immigration.

Linguistics 24, Section 1
Heritage Languages (1 unit, LG)
Professor Leanne Hinton
Wednesday 11:00-12:00, 89 Dwinelle Hall, CCN: 52278

A "heritage language" is a language other than English that one has in his or her family background, whether or not the individual actually knows the language. In this seminar, we will explore issues of bilingualism, language shift and language politics and policy in the United States. We will focus especially on the personal side of bilingualism and language shift–what it is like to learn English as a second language in the United States, how families maintain or fail to maintain the heritage language, what the personal and social consequences are of language maintenance vs. language shift. We will also examine the history and current status of languages other than English in the United States. The course will have weekly readings and several written assignments and formal and informal class presentations. Among other things, each student will write a "linguistic autobiography," and research his or her heritage language and give a presentation on it to the class. **This course is especially relevant for students who have some language other than English in their background–whether they speak it themselves or whether it is their parents or grandparents who are the speakers.**

Professor Leanne Hinton received a Ph.D. in Linguistics from the University of California, San Diego in 1975. She is the Director of Survey of California and Other Indian Languages. Her main focus in research is the loss and revitalization of endangered languages, especially American Indian languages. She also consults with indigenous peoples worldwide on language revitalization. She is the author of Flutes of Fire: Essays on California Indian Languages (Berkeley: Heyday Books, 1994); Sound Symbolism (ed. with Johanna Nichols and John Ohala, Cambridge University Press, 1994); Studies in American Indian Languages: Description and Theory (ed. with Pamela Munro, Berkeley: UC Press, 1998); The Green Book of Language Revitalization in Practice (ed. with Ken Hale, Academic Press, 2001); and How to Keep Your Language Alive (Heyday Books, 2002).

Linguistics 24, Section 2
Language Myths (1 unit, P/NP)
Professor Larry Hyman
Tuesday 10:00-11:00, 89 Dwinelle Hall, CCN: 52281

Everyone has preconceptions about language in general and languages in particular. But are these accurate? In this course we will discuss and evaluate a number of common language myths such as these: Are all languages equally complex? Are some more logical? More beautiful? Is there such a thing as a primitive language? Do some people speak more grammatically than others? Is the English language undergoing a process of decay? We will draw on facts from English, other languages that may be familiar to participants, and less known languages which bear on the above and other questions. **No linguistic or other prerequisites are required. All interested students are welcome, especially students who have a fascination with language and/or languages.**

Larry M. Hyman is a Professor of Linguistics at Berkeley where he chaired the Department of Linguistics from 1991 to 2002. He obtained his Ph.D. at UCLA in 1972 and subsequently taught at USC until coming to Berkeley in 1988. His research centers around the study of sound systems (phonology) and grammar, particularly within Bantu and other Niger-Congo languages in Africa. His publications include several books and numerous articles in the major journals in general and African linguistics. One of his long-standing interests is the study of tone languages, as found in Africa, Asia, Meso-America and elsewhere.

Linguistics 24, Section 3
Language and Politics in Southern Africa (1 unit, P/NP)
Professor Sam Mchombo
Wednesday 1:00-2:00, 211 Dwinelle Hall, CCN: 52284

Food for Thought dining arrangements will be discussed in class.

This seminar will focus on political developments in Southern Africa and the use of language in fostering national identity and attaining cultural emancipation. We will look at case studies representative of the dynamics of the region. The topics covered will include a brief history of the peoples of Southern Africa; family structure, kinship systems and traditional political institutions; cultural practices and religious beliefs; the impact of contact with western culture and civilization on language issues and political organization; language and its role in fostering national identity in post-independence Africa; models of national language policy in multi-ethnic societies; language use and democratic practice and human rights; the impact of AIDS on economic development and linguistic ecology; prospects of mother-education, and the use of African languages in science and technology. Since the course is a seminar, students will be expected to participate actively in the class. There will be a course reader. There will be no examinations. Grades will be based on one 500-word paper and class participation. **This seminar is part of the Food for Thought Seminar Series.**

Sam Mchombo is an Associate Professor in the Department of Linguistics, which he joined in 1988. He received his B.A. from the University of Malawi and Ph.D. from the University of London. He pioneered and taught courses in Linguistics and African Language Structure in what is now the Department of African Languages and Linguistics in the University of Malawi. From 1985-1988 he was a member of the Linguistics faculty at San Jose State University, teaching courses on general linguistics, syntax, and semantics. His research focuses on grammatical theory and African linguistic structure. Recently, he has also focused on aspects of African politics, delivering talks at the World Affairs Council on emergent democracies, as well as human rights in Africa. His publications include Theoretical Aspects of Bantu Grammar (1993), The syntax of Chichewa (Cambridge University Press, 2004), and "Democratization in Malawi: Its Roots and Prospects," published in a volume edited by Jean-Germain Gros called Democratization in Late Twentieth-Century Africa. Other works include papers on "National Identity, Democracy and the Politics of Language in Malawi and Tanzania," as well as "The Role of the Media in Fostering Democracy in Southern Africa," both published in The Journal of African Policy Studies, "Religion and Politics in Malawi" in Issues in Political Discourse Analysis (2005), and "Sports and Development in Malawi" in Soccer and Society Vol. 7 No. 2-3, 2006. He has delivered invited lectures and conference presentations in Hong Kong, Europe, Mexico, and in Africa. In Spring 2003, he was appointed Distinguished African Scholar by the Institute for African Development at Cornell University.

Mathematics 24, Section 1
What is Happening in Math and Science? (1 unit, P/NP)
Professor Jenny Harrison
Friday 3:00-4:00, 891 Evans Hall, CCN: 54409

In this seminar, we will discuss the latest developments in science and math. Students will present short oral reports from articles of their choice in the Science Times, Scientific American, Science News, or articles in What is Happening in the Mathematical Sciences. Discussion and debate are encouraged when ethical issues arise from breakthroughs such as human cloning and genetic engineering of food and animals. Students are encouraged to think of applications and possibilities of new research projects. Creative thinking is encouraged! Steven Hawking's book, "A Briefer History of Time," will be a focus of some discussions this semester. **Students considering a major in math or science have found this seminar a useful resource to help clarify their choice. This seminar is part of the On the Same Page initiative: http://onthesamepage.berkeley.edu.**

Jenny Harrison obtained her Ph.D. in mathematics in Warwick, England. She has taught at Oxford, Princeton, and Yale, as well as UC Berkeley. Her research interests include extensions of calculus to

fractals, point-like discrete domains and soap films. Applications of this theory to sciences may arise during this seminar.

Mathematics 24, Section 2
Randomness (1 unit, P/NP)
Professors Theodore Slaman and Jan Reimann
Wednesday 11:00-12:00, 39 Evans Hall, CCN: 54411

Food for Thought dining arrangements will be discussed in class.

We will discuss the question, ``What makes a sequence random?" A variety of answers have been proposed, such as unpredictability, indescribability, incompressibility, and typicalness. We will compare these heuristically, formulate them mathematically, and compare them precisely. In an algorithmic setting, we will see that they converge to the same concept. **This seminar is part of the Food for Thought Seminar Series.**

Theodore Slaman is a Professor in the Mathematics Department. He is particularly interested in mathematical logic in general and computability in particular. For more information regarding Professor Slaman, visit http://math.berkeley.edu/~slaman.

Professor Jan Reimann, normally at the University of Heidelberg in Germany, is a Visitng Assistant Professor in the Mathematics Department for the 2006-07 academic year. His areas of research are mathematical logic, computability theory, and algorithmic information theory.

Mathematics 24, Section 3
The Geometry of Relativity (1 unit, P/NP)
Professor Alan Weinstein
Tuesday 2:00-3:30, 891 Evans Hall, CCN: 55672

The first meeting of this seminar will be on Tuesday, January 23, 2007 during the second week of classes. There will be nine more Tuesday meetings on dates to be arranged.

This seminar is meant to fill in some of the mathematical background behind Hawking's "A Briefer History of Time." We will study the geometry underlying Einstein's special and general theories of relativity. Topics will include the geometry of Lorentz transformations in flat space time (for special relativity) and an introduction to riemannian geometry (for general relativity). The seminar activities will be a mix of reading, writing, discussion, and presentations by students and the instructor.
Students should have had Math 1A or the equivalent. The math that will be taught in the seminar will give students a head start (or a review) for more advanced courses. This seminar is part of the On the Same Page initiative: http://onthesamepage.berkeley.edu.

Alan Weinstein is Professor and Chair in the Department of Mathematics. His mathematical specialty is differential geometry and its physical applications. One of his current research topics concerns new notions of symmetry in general relativity.

Mechanical Engineering 24, Section 1
Art and Science on Wheels (1 unit, P/NP)
Professor Benson Tongue
Wednesday 12:00-1:00, 3108 Etcheverry Hall, CCN: 56002

This seminar will examine two devices near and dear to my heart—the automobile and the bicycle. Both of these have undergone a long history of change and innovation; both inspire passion in their users and both embody technical as well as artistic excellence. Some issues we will look at will be efficiency, alternative power sources, environmental impact, dynamics, aerodynamics and handling. Along the way we'll dispel some myths, and ideally people will leave with a deeper appreciation for what bicycles and cars truly represent. **Enrollment is limited to twelve students.**

Benson H. Tongue is a Professor in the Department of Mechanical Engineering and has been a member of the faculty since 1988. His interests lie in the fields of vibrations, dynamics and controls, not to mention Scottish dancing, bicycling and bird watching. He is the author of Principles of Vibrations and Dynamics: Analysis and Design of Systems in Motion.

Molecular and Cell Biology 90A, Section 1
Evolution–Creatures, not Creation (1 unit, LG)
Professor Jeremy Thorner
Friday 12:00-1:00, 2038 Valley Life Sciences Building, CCN: 57853

The advent of molecular biology, recombinant DNA methodology, and the capacity to obtain the complete nucleotide sequence of any genome (from a bacterium to a human) has confirmed the close relationships among all organisms at the genetic and biochemical level, and has confirmed the major tenets of the theory of evolution that were based on the fossil record and other more circumstantial and empirical evidence based on field observations of populations. This course will discuss the unique physical and chemical properties of both water and carbon, and other molecules and elements on which the life forms on our planet are based; the principles of the scientific method and its application to our observations of the natural world; how the term "theory" is applied in science; and the forces that influence organismal survival, adaptation and speciation. Readings will range from Charles Darwin to Steven Jay Gould to James D. Watson. **This seminar is for letter grade only. It may not be taken P/NP.**

Jeremy Thorner is a Professor in the Division of Biochemistry and Molecular Biology in the Department of Molecular and Cell Biology. He joined the Berkeley faculty on 1 July 1974, and has been here on this campus ever since. His current research addresses the mechanisms by which cells respond to and decode changes in their extracellular environment and induce the appropriate changes in metabolism, growth and proliferation rate, and cell shape, that allow the cell to cope properly with the changed circumstances. For more information regarding Professor Thorner, please visit his faculty web page at http://mcb.berkeley.edu/faculty/BMB/thornerj.html.

Molecular and Cell Biology 90B, Section 2
Membrane Transport Proteins: Genetics, Physiology, Diseases and Treatments (1 unit, P/NP)
Professor Terry Machen
Thursday 3:00-4:00, 2066 Valley Life Sciences Building, CCN: 57862

This seminar will discuss diseases or conditions that either result from or are treated by altered functions of membrane transport proteins. Membrane transport proteins are embedded in the membranes that surround cells and organelles and control the movements of nearly everything into, out of and within cells. The genetic disease cystic fibrosis will be used as an example of how disrupted ion channel function leads to pathology in the lungs, gastrointestinal tract and reproductive organs. A gene called golden will be used as an example of how an organelle ion transporter may control human skin pigmentation. We will

also discuss ulcers and cholera, diseases that are caused by bacteria but which are treated by either blocking (ulcers) or enhancing (cholera) the actions of membrane transport proteins. We will study normal physiology and clinical manifestations, screening for genetic causes, molecular operation of membrane transport proteins, and gene therapies that "cure" diseases and small molecule therapies that treat symptoms. Students will read one article and participate in one-hour discussions each week. **This seminar will be most valuable to those who plan to major in Molecular and Cell Biology or any other biological science, but the general principles will be interesting to anyone wanting some background to understanding the connections among genes, proteins, physiology and disease.**

Terry E. Machen is a Professor of Cell and Developmental Biology and has been on the faculty in the Department of Molecular and Cell Biology at the University of California, Berkeley since 1975. He was Chair of the Division of Cell and Developmental Biology from 1990 to 1993 and the Miller Institute of Basic Science Professor in 2002. He teaches lower- and upper-division undergraduate and graduate courses in physiology, epithelial ion transport and innate immune defense in the lungs. The general goal of his research is to determine how cytoplasmic and organellar Ca, pH and redox contribute to physiology and pathophysiology of secretory epithelial cells. For more information regarding Professor Terry Machen, please visit his faculty web page at http://mcb.berkeley.edu/faculty/CDB/machent.html.

Molecular and Cell Biology 90B, Section 3
Blood, Guts and Plumbing: The Human Body (1 unit, P/NP)
Professor John Forte
Wednesday 2:00-3:00, 2030 Valley Life Sciences Building, CCN: 57865

The human body is a wonderful machine. It has pumps, combustion cells, fuel storage and exhaust systems. It even comes with air conditioning and circulating coolant. This seminar will explore the operation of these systems. Some students will be asked to be the mechanic who must explain the workings of one of the component parts, why it works so well, and what may sometimes go wrong. Others will be asked to debate opinions and misconceptions pertaining to optimization of the machine.

Professor Forte has taught and done research at Berkeley since 1965. He received an undergraduate degree from Johns Hopkins University, where he also played football and was captain of the fencing team. He received his Ph.D. in Physiology from the University of Pennsylvania. Here at Cal he currently teaches Biology 1A and an advanced course in physiology (MCB 136). His research interests concern the mechanisms of biological membrane transport and the regulation of these processes. He has frequently used the gastrointestinal tract as a model to explore the biophysics and biochemistry of cellular secretory and absorptive systems.

Molecular and Cell Biology 90C, Section 1
You and Your Genome (1 unit, P/NP)
Professor Jasper Rine
Monday 10:00-11:00, 2032 Valley Life Sciences Building, CCN: 57868

Much of our fate is written in our genes and it is highly likely that every student at Berkeley will live to have his or her entire individual genome sequence determined. But how are we to make sense of this mountain of information? This seminar will explain the science behind how genomes are sequenced, and how we interpret the sequence. The impact of genes on health and disease will be discussed along with the impact of genes on human behavior. Critical issues surrounding genetic privacy and the social impact of this knowledge will bring the technical issues into a contemporary setting. **No special background is needed. It would be difficult to have a class full of people that do not believe in evolution, but open-minded skeptics would be no problem. Many of the arguments have a decidedly evolutionary basis.**

Jasper Rine is a Professor of Genetics Genomics and Development. He has served on the Berkeley faculty for twenty-four years. His work in genetics includes work on model organisms, the creation of the dog genetic map, and more recently studies of human variation. Professor Rine was the recipient of the Distinguished Teaching Award in 1997, the Director of the Human Genome Center at LBGNL from 1991-1994, and is now a Professor of the Howard Hughes Institute of Medicine.

Molecular and Cell Biology 90C, Section 2
Studying Baseball Statistics to Learn Bioinformatics (1 unit, P/NP)
Professor Michael Eisen and Mr. James Fraser
Thursday 5:00-7:00, Unit 2 Towle Residence Hall Seminar Room L11, CCN: 57871

This seminar will meet for eight weeks on the following dates: January 18 and 25; February 1, 15, and 22; and March 1, 15 and 22, 2007. Food for Thought dining arrangements will be discussed in class.

One of the primary problems facing biologists is how to deal with the massive amount of information generated by genome sequencing and other high-throughput experiments. The ability to sort and analyze this information effectively is crucial for generating high quality research. Similarly, baseball statistical analysis, or sabermetrics, has benefited from analysis of detailed play-by-play information entering the public domain. This course will teach methods and theory for computational analysis of biological datasets through examples using baseball statistics. Students will learn to program in perl, how to use databases, and how to form and test scientific hypotheses with large datasets. The methods to answer questions such as "how significant is the similarity between two genes?" and "how significant is a sacrifice bunt?" will be revealed to be quite similar. Students will leave the course with a greater appreciation for baseball, biology and the parallels between the two. **This seminar is part of the Food for Thought Seminar Series.**

Michael B. Eisen is a computational and evolutionary biologist in the Department of Molecular and Cell Biology at UC Berkeley. He received his undergraduate degree in mathematics (with extensive side studies in ecology and evolutionary biology) from Harvard College in 1989. He received a Ph.D. in biophysics from Harvard University in 1996 for his doctoral research on influenza virus proteins' structure and function. After a summer working as a play-by-play announcer for the Columbia Mules (a minor league baseball team in Columbia, Tennessee), he joined the laboratories of Patrick O. Brown and David Botstein at Stanford as a postdoctoral fellow. While at Stanford, Eisen developed methods and software for the analysis of data from genome-wide expression studies. In 2000, he moved to Berkeley, where he runs his own lab studying how regulatory information is encoded in genome sequences and the role that variation in regulatory sequences has played in evolution. Dr. Eisen is an ardent advocate for the free flow of scientific methods, data, and knowledge. He has won several prizes for his research and for his work on Public Library of Science, an organization working to make the scientific literature a freely available resource.

James Fraser is a graduate student in the Department of Molecular and Cell Biology at University of California at Berkeley. He has been a member of the Society for American Baseball Research (SABR) since 1999 and has published work in the Journal of SABR's Statistical Analysis Committee Journal, By The Numbers. James has worked in bioinformatics labs at the University of Toronto and McGill University, where he received his B.Sc. in 2005.

Molecular and Cell Biology 90E, Section 2
Brain Science in Contemporary Film and Fiction (1 unit, P/NP)
Professor Walter Freeman
Wednesday 12:00-1:00, 2032 Valley Life Sciences Building, CCN: 57880

This seminar will offer you an opportunity to learn some brain science and its history. You will also read works of modern fiction that involve interpretations of the nature of mind as it relates to brain, and meet

to discuss your findings and views. Fiction writers often tell us more about who we are than philosophers and psychiatrists do. Some of the writers are scientists or clinicians who use fiction to by-pass the constraints of scientific journals. Others are people like yourselves, who read what scientists have written and then extrapolate from their own experience. We invite you to envision your own future. Keep a record and you'll be able to compare your thoughts now with your thinking when you graduate.

Walter J Freeman studied physics and mathematics at M.I.T., English and philosophy at the University of Chicago, medicine at Yale University, internal medicine at Johns Hopkins, and neurophysiology at UCLA. He has taught brain science in the University of California at Berkeley since 1959, where he is Professor of the Graduate School.

Molecular and Cell Biology 90E, Section 3
Brain, Mind, Music, Culture (1 unit, P/NP)
Senior Lecturer David E. Presti
Wednesday 3:00-4:00, 107 Mulford Hall, CCN: 57883

Music has a deep and mysterious impact on human behavior. This seminar will explore music, the brain, the human mind, and how they are related within contemporary culture. Content will range from the biophysics of sound sensation and the neurophysiology of auditory perception to an exploration of the roots of music in human culture, via focus on several musicians, musical genres, and musical instruments. Students will do a project consisting of a brief descriptive presentation of the work of a favorite musician or musical genre.

David Presti has taught neuroscience in the Department of Molecular and Cell Biology for fifteen years. He has also taught neuroscience to Tibetan monks in India and is interested in how science can address the connection between what we know as the brain and what we call the mind.

Natural Resources 24, Section 1
Dean's Day Out: Follow Your Food (1 unit, P/NP)
Professors Sally Fairfax and Lynn Huntsinger
Wednesday 4:00-5:00, 260 Mulford Hall, CCN: 61303

This seminar will meet on Wednesday, January 17, 2007 from 4:00 to 5:00 p.m. for an organizational meeting in 260 Mulford Hall and Wednesdays, April 4, 11, 18 and 25, 2007 from 4:00-5:00 p.m. in 260 Mulford Hall for background and trip planning. The seminar's field trip will be held on Saturday, April 28, 2007 from 7:00 a.m. to 10:00 p.m. and will begin at West Circle on campus.

Follow your food from seed to salad (and steak) with four discussion meetings and a one-day, all day field trip from lab to farm to dinner. Learn about the nutritional, environmental, and controversial aspects of food production in the Bay Area. Full field trip, class attendance, and all day participation is required to pass.

Sally K. Fairfax is Henry J. Vaux Distinguished Professor of Forest Policy in the S & E Division of Environmental Science, Policy and Management (ESPM) and the Associate Dean of Instruction and Student Affairs for the College of Natural Resources. Her expertise is public land management and land conservation. She and her lab are presently working on a book on alternative food systems.

Lynn Huntsinger is Associate Professor in the Department of Environmental Science, Policy and Management (ESPM). Her expertise is in agriculture, ecological history, and rangeland ecology and management.

Natural Resources 24, Section 2
CNR-Based Careers: A Discussion with Alums of the College (1 unit, P/NP)
Dean Paul W. Ludden
Thursday 4:30-6:30, 133 Giannini Hall, CCN: 61306

This seminar will meet six weeks on the following dates: February 1,15, and 22; March 1, 8, and 15, 2007.

During each session participants will meet guest speakers who will speak informally about their work, their preparation for it, and the problems their work addresses. Following guest speaker presentations, participants are encouraged to interact with the guests to fully reap the benefit of the speakers' experience. Dinner is included. **Attendance at all six sessions is mandatory.**

Paul W. Ludden is a Professor in the Department of Plant and Microbial Biology and Dean of the College of Natural Resources. His research interests and expertise are in microbial and plant biochemistry, particularly the role of enzymes in biological nitrogen fixation. His studies help illuminate the role of catalysts in converting nitrogen gas into soil-enriching ammonium which helps lay the groundwork for advances in the development of non-polluting nutrients.

Natural Resources 24, Section 4
Global Environment Theme House Freshman Seminar (1 unit, P/NP)
Professors James Bartolome and Allen Goldstein
Thursday 5:00-6:00, Classroom A in Foothill 1, CCN: 61309

After the formal sessions, the professor and students may continue their discussion informally over dinner in the Dining Commons. Food for Thought Dining arrangements and field trip arrangements will be discussed in class.

The goal of this Freshman Seminar is to bring students and faculty together to explore issues such as global environmental change, policy and management of natural resources, sustainable rural and urban environments, and environmental leadership. The seminar will provide students and faculty a forum to exchange ideas, challenge one another's thinking, and share experiences in a small group setting. Students will have the opportunity to do research and teach their peers about regional to global environmental issues in preparation for Theme Program field trips and guest speakers. **Course enrollment restricted to Global Environmental Theme House participants. Obtain CEC from the instructor. This seminar is part of the Food for Thought Seminar Series.**

Jamie Bartolome is Professor in the Division of Ecosystem Science in the Department of Environmental Science, Policy and Management. He received his PhD in Wildland Resource Science from UCB in 1976. His research focuses on the conservation, use and restoration of rangeland ecosystems and how they are affected by grazing and fire. He will teach the seminar.

Allen Goldstein is Professor in the Division of Ecosystem Science in the Department of Environmental Science, Policy and Management. He received a B.S. in Chemistry and a B.A. in Politics from UC Santa Cruz, and a Ph.D. in Chemistry from Harvard University. His research addresses the interface between natural and anthropogenic influences on regional and global atmospheric composition and chemistry. He will lead the field trips.

Naval Science 24, Section 1
Asymmetric Conflict: Ethics of Guerilla Warfare and Terrorism (1 unit, LG)
Professor David Buckey
MW 1:00-2:00, 155 Hearst Gym, CCN: 57612

What is the nature of war? What constitutes just or unjust war? Who are legitimate combatants? How do terrorists and freedom fighters differ? In this seminar, we will trace the origins and review the practices of asymmetric armed conflict, guerrilla warfare and terrorism; examine the political roles of combatants and civilian populations in asymmetric warfare; and analyze the theoretical and practical considerations of asymmetric conflict.

Captain David L. Buckey is from Sacramento, California and graduated from California State University, Chico. He was commissioned through Aviation Officers Candidate School in May 1981 and was designated a Naval Flight Officer in September 1982. Captain Buckey holds a master's degree in National Security Affairs from the Naval Post-Graduate School in Monterey, California. Captain Buckey has had many challenging assignments throughout his Naval career. He has flown several fixed-wing aircraft including the EC-130Q and E6A/B TACAMO aircraft. Captain Buckey has served aboard the U.S.S. Theodore Roosevelt (CVN 71), U.S.S John C. Stennis (CVN 74), U.S.S. Peleliu (LHA 5), and U.S.S. Tarawa (LHA 1). Captain Buckey has participated in numerous exercises including Operation Southern Watch and most recently Operation Iraqi Freedom as the Task Force Air Officer for the largest deployment of amphibious based air power ever assembled.

Nuclear Engineering 24, Section 1
The Scientists of the Manhattan Project, their Contributions to President Eisenhower's Atoms for Peace Initiative and their Lasting Legacy to Nuclear Power in the Twenty-first Century (1 unit, P/NP)
Professor Brian D. Wirth
Tuesday 3:00-4:00, 47 Evans Hall, CCN: 64003

Food for Thought dining arrangements will be discussed in class.

The discovery of the neutron in 1932 by James Chadwick, the 1932 experiment by John Cockroft and Ernest Walton that confirmed Albert Einstein's postulate from the theory of relativity about the equivalence between mass and energy (E=mc^2), and the subsequent discovery of fission in 1938 revolutionized atomic and nuclear physics. During World War II, the United States established the Manhattan Project, which brought together many of the world's preeminent scientists and engineers under the leadership of J. Robert Oppenheimer with the goal of building a new and more explosive weapon based on these discoveries. The world entered the nuclear age with the explosion of the atomic bomb at Trinity, N.M. on July 16, 1945 and less than a decade later, U.S. President Dwight D. Eisenhower provided his vision for the peaceful use of atomic energy in a speech to the United Nations on December 8, 1953 entitled 'Atoms for Peace.' This course will cover the history of the scientists and engineers who participated in the Manhattan Project and their contributions to nuclear science and technology, within the context of President Eisenhower's 1953 address and nuclear power in the twenty-first century. Students in the course will be expected to perform a research report on an individual scientist or engineer from the Manhattan project and his/her contributions to nuclear energy. **This seminar is part of the Food for Thought Seminar Series.**

Brian D. Wirth received a B.S. in nuclear engineering from the Georgia Institute of Technology in 1992 and a Ph.D. in mechanical engineering from the University of California, Santa Barbara in 1998, where he was a Department of Energy Nuclear Engineering Graduate Fellow. In 2002 he joined the faculty at University of California, Berkeley as an Assistant Professor of Nuclear Engineering following several years in the computational materials science group at Lawrence Livermore National Laboratory. His research interests include multiscale modeling and experiments to develop improved understanding and models of microstructure-property relationships and microstructural evolution during processing and service in

hostile environments, with an emphasis on irradiation effects. For more information regarding Professor Wirth, visit http://www.nuc.berkeley.edu/people/faculty/wirth.htm.

Nutritional Sciences and Toxicology 24, Section 1
Papers with the Prof (1 unit, P/NP)
Professor George Chang
Tuesday 11:00-12:00, Unit 2 Towle Residence Hall L3 Seminar Room, CCN: 64598

Food for Thought dining arrangements will be discussed in class.

Do you like reading newspapers while eating? Sharing news stories with friends? Figuring out where the reporters didn't get the whole story? In "Papers with the Prof," students will browse through newspapers online or in the Crossroads Dining Commons. They'll choose interesting articles, do research on the story behind the story, and discuss their findings in seminar. After seminar, students will dine with the professor in Crossroads. Occasionally there will be tours of local newspapers and conversations with reporters. **This seminar is part of the Food for Thought Seminar Series.**

Professor Chang received an A.B. in chemistry from Princeton and a Ph.D. in biochemistry from Cal. He has been heavily involved in undergraduate affairs, serving on the Undergraduate Affairs Committee, the Committee on Courses, and the Committee for Undergraduate Scholarships and Honors of the Academic Senate. He has also served on ad hoc committees dealing with disabled students and the need to develop a sense of community on each of the UC campuses. His most exciting assignment in the 20th Century was to serve on The Chancellor's Commission to Study the University's Responses to a Diversified Student Body. In 2005 Professor Chang became the inaugural professor in Cal's new Residential Faculty Program. In Spring, 2006 he started "Papers with the Prof," an experimental newspaper-reading program in the Crossroads Dining Commons. This seminar grew out of that program.

Physics 24, Section 1
Thinking Big: Space, Time and Our Universe (1 unit, P/NP)
Professor Robert Jacobsen
Wednesday 11:00-12:00, 41 Evans Hall, CCN: 69880

Food for Thought dining arrangements will be discussed in class.

The nature of space and time, and related questions about the structure of our Universe, are basic scientific questions that we're still working on. The seminar is meant to help students think & talk about them in a useful but non-mathematical way. Students should not expect to learn the "one true answer"; we don't have that yet. They should expect to learn something about how we study these things, what we do and don't yet know, and what it's like to work in this area. Along the way, we'll do a significant amount of reading & discussion, meet some of the people actually making progress in this area right now, and visit some of the places where this work is done via one or more (optional) field trips. **No particular preparation is expected, not even high-school physics, but a certain amount of curiousity is going to be needed to keep the seminar from becoming entirely boring. This seminar is part of the Food for Thought Seminar Series. This seminar is part of the On the Same Page initiative: http://onthesamepage.berkeley.edu.**

Bob Jacobsen is a high energy physicist and ex-engineer who really likes to teach.

Physics 24, Section 2
The Big Bang and the Early Universe (1 unit, P/NP)
Professor Bernard Sadoulet
Monday 11:00-12:00, 55 Evans Hall, CCN: 69883

Food for Thought dining arrangements will be discussed in class.

Each week a scientist from the Department of Astronomy or the Department of Physics will present a one-hour seminar on his/her own research in cosmology, followed by an informal discussion. Topics that will be covered include the Big Bang, the syntheses of the elements, the cosmic microwave background radiation, the matter-antimatter asymmetry in the universe, the dark matter puzzle, gravitational collapse and the formation of large-scale structures, the birth and death of stars, planetary systems, the emergence of life, and searching for extraterrestrial intelligence. **This is a general seminar, designed to interest any Freshman interested in the Early Universe. No prerequisite, except a curious mind. This seminar is part of the Food for Thought Seminar Series. It is also part of the On the Same Page initiative: http://onthesamepage.berkeley.edu.**

Bernard Sadoulet is a Professor of Physics and was appointed in the Physics Department at Berkeley in 1985. He was a particle physicist at LBNL and at CERN who had the chance of being involved in the discovery of the J/Psi and the W and Z vector bosons (which led to two Nobel Prizes). Professor Sadoulet was the Director of the Center for Particle Astrophysics from 1989 to 2001 and is now Director of the UC Institute of Particle Physics and Cosmology. He is a member of the UC Berkeley Divisional Council of the Academic Senate. His research speciality is Experimental Particle Cosmology, in particular the problem of Dark Matter. His interests include science policy, education, and university involvement at the service of the community. For more information regarding Professor Sadoulet, please visit his faculty web page at http://physics.berkeley.edu/research/faculty/Sadoulet.html.

Physics 24, Section 3
Physics of the Infinitesimally Small to Understand the Infinitely Large: Particle Physics and Cosmology in the Next Decade (1 unit, P/NP)
Professor Marco Battaglia
Friday 1:30-2:30, 395 LeConte Hall, CCN: 69886

The seminar will review the forthcoming program for exploring physics of elementary particles at the high energy frontier. This exploration, being carried out with large particle accelerators, is expected to answer to some of the most crucial problems in our understanding of the physical world: the origin of mass and the nature of dark matter in the Universe. Data obtained by studying elementary particles will shine light on the mystery of the nature of a large fraction of the mass of the Universe. Students will be encouraged to carry out original work based on computer simulation which will address the problems discussed in the seminar course. **This seminar is part of the On the Same Page initiative: http://onthesamepage.berkeley.edu.**

Before joining the Berkeley faculty three years ago, Professor Battaglia worked for over a decade at CERN, the European Organisation for Nuclear Research, devoting his research to studies of electron-positron interaction at high energies, planning for future accelerator experiments. At Berkeley, his research group is currently carrying out physics studies on the connections of particle physics and cosmology and developing advanced semiconductor detectors for application at the next large scale facility in particle physics, the International Linear Collider.

Psychology 24, Section 1
Cultural Assumptions of American Thought (1 unit, P/NP)
Professor Kaiping Peng
Wednesday 11:00-12:00, 3140 Tolman Hall, CCN: 74278

This course is about cultural assumptions of American thought systems. Psychologists have studied American minds more than those of any other cultural group on earth and often assumed the American psyche to be representative of universal human minds. However, such assumptions need to be critically reviewed. The limitations and shortcomings of the American psyche need to be explored in cross-cultural contexts. This seminar will offer the students a particular kind of insight into the cultural assumptions of American minds-their characteristic biases, modes of thinking and perceiving, values, and beliefs-that they are unlikely to find elsewhere. It will do this by contrasting their cultural assumptions with those from other cultures, primarily but not exclusively those of Asians and ethnic minority groups in the United States. Its theoretical foundations lie in the burgeoning field of cultural psychology, which looks at how culture influences the basic functioning of our minds. This seminar will be useful for all students seeking to understand themselves better, whether to help find their way in other cultures, to navigate a growing multicultural society, to negotiate the vagaries of an international market, or for just plain psychological insight. And it will be useful for those who want to make sense of the way Americans think and act, something increasingly important in a global economy as the US establishes itself in foreign markets and tensions increase among different cultures and civilizations.

Kaiping Peng is Associate Professor of Psychology at UC Berkeley. He received his B.S. from Beijing University, People's Republic of China, in 1994 and his M.S. and Ph.D. from the University of Michigan, Ann Arbor. His research interests are social and cultural psychology, including human reasoning, inference, and cross-cultural understanding.

Rhetoric 24, Section 1
Bad Books and How to Spot Them (1 unit, P/NP)
Professor Daniel F. Melia
Wednesday 9:00-10:00, 7415 Dwinelle Hall, CCN: 77861

Food for Thought dining arrangements will be discussed in class.

The world is full of Bad Books–not just uninteresting or uninformed or morally repugnant books, but books that set out to present or defend positions that are unsupportable in logic. I speak here not of books like Hitler's Mein Kampf, but of books such as von Daniken's Chariots of the Gods, which presents "proof" of visits to earth by extra-terrestrials, or Barry Fell's America B.C. which "proves" that ancient Celts reached North America before the time of Christ. Often these Bad Books become quite popular. This seminar will examine the proposition that there is a recognizable rhetoric common to many such Bad Books and investigate possible reasons why they often gain a wider audience than Good Books on the same subjects. **This seminar is part of the Food for Thought Seminar Series.**

Daniel F. Melia is an Associate Professor in the Department of Rhetoric and the Program in Celtic Studies. His areas of interest include oral literature, Celtic languages (Welsh, Irish), folklore, medieval history and literature. For more information, please see Professor Melia's faculty biography on the web at http://rhetoric.berkeley.edu/faculty_bios/daniel_melia.html.

Rhetoric 24, Section 3
Prosecuting Sexual Violence in International Law: Case Studies from Bosnia, Rwanda, Sierra Leone, and East Timor (1 unit, LG)
Professor David Cohen
Wednesday 11:00-12:30, 7415 Dwinelle Hall, CCN: 77862

This seminar will meet the first ten weeks of the semester.

Sexual violence was prosecuted as a war crime following WWII, but since the establishment of new international criminal tribunals since 1993/1994 this area of international law has undergone rapid develoment and expansion. Because of the systematic nature of sexual violence in conflicts like those in Bosnia, Rwanda, Sierrea Leone, Darfur and elsewhere courts have begun to examine the nature of sexual violence in armed conflict and its relation to other international crimes such as torture, genocide, and enslavement. In our seminar we will study cases that have played a key role in these developments.

David Cohen is the Director of the Berkeley War Crimes Studies Center. The Center engages in research programs on war crimes and human rights trials from World War II to today. The Center also monitors trials and conducts judicial training programs for war crimes and human rights tribunals in Sierra Leone, Rwanda, East Timor, Cambodia, and Indonesia.

Spanish 24, Section 1
Talking Funny: Language Variation in Spanish and English Literary Texts (1 unit, LG)
Professor Milton Azevedo
Thursday 12:00-1:00, 186 Barrows Hall, CCN: 86178

This seminar analyzes language through the literary representation of regional and social varieties of Spanish and English (as in Mark Twain's Adventures of Huckleberry Finn or Guillermo Cabrera Infante's Tres Tristes Tigres) and discusses social and cultural implications of language variation. It is taught in English with readings in both English and Spanish. Grades will be based on required participation in class discussions and a final oral presentation on an individual project. The reader will be available at the Copy Central on 2560 Bancroft Avenue. **The ability to read and understand spoken Spanish is essential to follow this course successfully. Please note: this is not a conversation course. Students interested in taking a course focusing on conversation or otherwise improving their ability to speak Spanish should see the Undergraduate Assistant in the Department of Spanish and Portuguese.**

Professor Milton Azevedo specializes in Hispanic Linguistics and his research focuses on applications of linguistics to literature. He has taught Freshman Seminars since spring 1999.

Spanish 24, Section 2
Borges/Fantastic Fictions (1 unit, P/NP)
Professor Natalia Brizuela
Tuesday 11:00-12:00, 225 Dwinelle Hall, CCN: 86181

What does "fantastic fiction" mean? Do these tales take place–at least in the 20th century–in urban or in rural spaces? Is there any use or function to the creation of imaginary geographies? How do these questions get played out in Argentine literature, and in particular in Jorge Luis Borges' writings? During the seminar we will read a number of short stories by Argentine writer Borges which could be said to form a literary corpus characterized by a double register: the city and the fantastic. Obsessed with Buenos Aires, these Borges stories will trace strange city scapes of that urban metropolis which we will analyze. We will also read–and watch!–some of Borges' incursions into film inasmuch as they relate to the seminar's topic.

Natalia Brizuela is Assistant Professor of Latin American literatures and cultures. She specializes in Argentine and Brazilian literature and visual culture. She regularly teaches classes on Borges, on the Latin American essay genre, on contemporary fiction, on travel & displacement and on the relationship between literature, photography and film.

Spanish 24, Section 3
Sor Juana Ines de la Cruz: Exploring the Cosmos from Colonial Mexico (1 unit, P/NP)
Professor Emilie Bergmann
Monday 12:00-1:00, 205 Dwinelle Hall, CCN: 86183

This seminar will be an exploration of the spaces and borders occupied and visited by the seventeenth-century Tenth Muse Sor Juana Inés de la Cruz: lyric, astronomical, polemical, theatrial, theological, cosmological, culinary, colonial, and criolla (Mexican-born of Spanish parents). Our focus will be on the historical context and the polemic surrounding Sor Juana's writing, including study of the Respuesta and her poetic challenges to the religious and secular discourses of patriarchy. Discussion will be in English; texts are available in Spanish and English. **Grades will be assigned on the basis of attendance, participation in discussions and weekly class presentations.**

Emilie L. Bergmann has published studies of Sor Juana from the perspectives of feminism and the visual arts, and is co-editor of a volume of essays, Approaches to Teaching Sor Juana. She has also co-edited ¿Entiendes? Queer Readings, Hispanic Writings (Duke UP 1995) and Mirrors and Echoes: Women's Writing in Twentieth-Century Spain (forthcoming).

Undergraduate Business Administration 24, Section 1
The Birth of Christianity: from Jesus to Augustine (1 unit, P/NP)
Professor Mark Rubinstein
Thursday 2:00-3:30, C325 Cheit (Haas School), CCN: 08447

This seminar will meet for ten weeks, beginning January 18, 2007 and ending March 22, 2007.

This seminar examines several aspects of early Christianity from the birth of Jesus in 4BC to the death of Augustine in 430AD. Christianity is the world's most successful religion, claiming today about two billion adherents, about one out of every three people on earth. How did that happen? Was it the result of divine intercession, a chance historical mutation, or the natural outgrowth of historical forces? To answer this question, we will review the development of the books of the New Testament, the historical evidence for and against Paul's classic interpretation of the death of Jesus, and the further develpment of Christian philosophy culminating in the works of Augustine. Students will be asked to read portions of the New Testament, Augustine's Confessions, C.S. Lewis' Mere Christianity, and the instructor's new book, "The Birth of Christianity: from Jesus to Augustine to the Modern World." Students need to be prepared for an uncompromising dissection of the historical circumstances and theology of early Christianity. **Discussion of religion can be delicate. Students need to be prepared for a dispassionate, critical and two-sided treatment of Christianity and related religions. We will be evaluating the historical role and the veracity of Christianity, as well as what religion reveals about human psychology and thinking. The course should not be used to proselytize for or against religious beliefs.**

Mark Rubinstein is a Professor of Finance in the Haas School of Business. He is best known for his research in asset pricing and deriviatives. In 2006 he published his most recent book, "A History of the Theory of Investments" (Wiley). Recently he radically changed the focus of his work to Western intellectual history and is currently working on a series of books in that area. The first that will soon be completed is "The Birth of Christianity: from Jesus to Augustine to the Modern World."

Vision Science 24, Section 1
The Human Eye (1 unit, P/NP)
Professor Richard C. Van Sluyters
Friday 2:00-4:00, 394 Minor Hall, CCN: 66403

This seminar will meet approximately every other week throughout the semester, beginning the first week of the semester.

This seminar will include a series of instructor-led discussions on the structure and function of the human eye and its appendages. The use of standard clinical instruments to view the exterior and interior of the eye will be demonstrated. Students will then employ these instruments to observe one another's eyes. Digital images of the iris will be captured and provided to each student. Examples of the topics to be discussed include the following: Why is the cornea so clear and the sclera so white? Why is the iris so beautifully colored? What is the fluid in the eye, where does it come from, and where does it go? How do the skull and bony orbit protect the eye without hindering its performance? How do the appendages of the eye—the eyelids and eyebrows—work, and what are their functions? How does the eye adjust its focus from far to near, and why do we lose this ability with age? How do contact lenses work, and what happens to the cornea when laser refractive surgery is performed?

Professor Richard C. Van Sluyters joined the faculty of the School of Optometry in 1975, and currently serves as the School's Associate Dean for Student Affairs. He received his undergraduate training at Michigan State University, studied optometry at the Illinois College of Optometry and was a graduate student at Indiana University. He holds doctorates in optometry and vision science and was a postdoctoral fellow at Cambridge University in England. He teaches courses on the anatomy and physiology of the eye and visual system.

SOPHOMORE SEMINARS

The following courses are limited to 15 students. Each is offered for one or two units of credit. Second-year students will be given priority for enrollment. Courses designated P/NP may be taken pass/no pass only; courses designated LG may be taken for a letter grade or on a pass/no pass basis. If a course is designated as requiring the consent of the instructor, or if you would like additional course information, contact the undergraduate assistant in the department offering the seminar.

English 84, Section 1
High Culture, Low Culture (2 units, P/NP)
Professor Julia Bader
Thursday 2:00-5:00, 300 Wheeler Hall, CCN: 28176

The course will focus on analyzing the films of the Coen brothers and earlier noir classics, and the stories of Raymond Carver, in relation to issues of representation, genre and gender. We will make use of University Art Museum exhibits, Cal Performances and Pacific Film Archive films to extend our range of cultural experiences.

Professor Julia Bader teaches in the English Department and specializes in the modern period, both British and American, with an emphasis on fiction, film, and feminism.

Environmental Sciences 84, Section 1
Issues in Campus Sustainability: What Does the Term "Green Building" Mean? (1 unit, LG)
Professor William Berry
Wednesday 4:00-5:00, 55A McCone Hall, CCN: 30424

Current Regents' policy indicates that new campus buildings should be "green." We will talk about composting toilets, sod and plant roofs, photovoltaics and other methods for energy uses and uses of "grey" water in green building planning. As well, we will review environmental assessments made by students in the past year. Students working on local environmental issues and those considering joining a student environmental issue group are encouraged to join the discussion to share their experiences. **Students may be able to earn 2 units. Talk to Professor Berry for details.**

Professor Berry teaches a number of courses in basic environmental science and has both research and teaching programs in impacts of climate change on environmental changes and on biodiversity. He directs an internship program in which students assist Bay Area environmental science teachers.

Integrative Biology 84, Section 1
Jane Goodall Meets Edward Tolman: Behavioral Research at Berkeley (1 unit, P/NP)
Professor Eileen Lacey
Wednesday 3:00-5:00, 5053 Valley Life Science Building, CCN: 43044

The goal of this seminar is to introduce sophomores to the wealth of research on animal behavior that is conducted on the Berkeley campus. The seminar will consist of a series of discussions with faculty in an intimate seminar setting. The seminar will meet for two hours per week throughout the semester. During the first hour of each meeting, a member of the Berkeley faculty will discuss his or her research in behavior, with emphasis on the role of undergraduates in their work. As appropriate, these interactions will include visits to faculty labs. During the second hour of each meeting, Professor Lacey will moderate a discussion of the concepts and principles covered in the preceding faculty presentation. A brief synopsis of the presentation and discussion will be due the following week. For students interested in behavior,

the seminar will provide a unique introduction to research on campus that will, ideally, facilitate future work as an undergraduate research assistant in a behaviorally oriented lab. **The seminar is open to students from any department and, in fact, a mix of backgrounds and interests is preferable. The primary requirement is that the students be interested in behavior as a potential direction for future study and research. To preserve the informal seminar setting, enrollment should be no more than ~ 12 students.**

Eileen Lacey's research program explores the evolution of behavioral diversity among vertebrates, with an emphasis on studies of mammals. Specifically, by combining field studies of behavior, ecology, and demography with molecular genetic analyses of kinship and population structure, she seeks to identify the causes and consequences of variation in mammalian social behavior. Currently, Dr. Lacey is engaged in studies of several species of subterranean rodents in Argentina and Chile.

Natural Resources 84, Section 1
Global Environment House Sophomore Seminar (1 unit, P/NP)
Professors Allen Goldstein and Peter Berck
Thursday 5:00-6:00, Classroom A in Foothill 1, CCN: 61312

After the formal sessions, professor and students may continue their discussion informally over dinner in the Dining Commons.

The goal of this Sophomore Seminar is to bring students and faculty together to explore issues such as global environmental change, policy and management of natural resources, sustainable rural and urban environments, and environmental leadership. The seminar will provide students and faculty a forum to exchange ideas, challenge each other's thinking, and share experiences in a small group setting. Students will have the opportunity to do research and teach their peers about regional to global environmental issues in preparation for Theme Program field trips and guest speakers. **This seminar is part of the Food for Thought Seminar Series. Course enrollment restricted to Global Environmental Theme House participants. Obtain CEC from instructor(s).**

Allen Goldstein is Professor in the Division of Ecosystem Science in the Department of Environmental Science, Policy and Management. He received a B.S. in Chemistry and a B.A. in Politics from UC Santa Cruz, and a Ph.D. in Chemistry from Harvard University. His research addresses the interface between natural and anthropogenic influences on regional and global atmospheric composition and chemistry. He will lead the field trips.

Peter Berck is a Professor of Agricultural and Resource Economics and Policy. He was an undergraduate at Cal, received a Ph.D. in Economics from MIT in 1976, and has been teaching at Cal ever since. His research has been on the economics of forestry, fisheries and water, on food security in developing nations, and on the costs of environmental regulation. He will teach the seminar.

Peace and Conflict Studies 84, Section 1
Peace on Earth, Golden Rules, and the World's Religions (2 units, P/NP)
Lecturer Americ Azevedo
Thursday 2:00-4:00, 240 Mulford Hall, CCN: 66702

Religions, which preach peace and love, are often blamed for causing the bloodiest wars. This is the great paradox of religion and war. Can we resolve it? The "golden rule" is expressed by all major world religions. "Do unto others as you would have them do unto you." Essentially, great religions are rooted in love. But we often see love replaced by fear and the hate that follows. Can the great world religions reaffirm their common roots?
This will be a semester-long Socratic dialogue. Students will engage in thinking deeply on these issues. The weekly topic agenda may be modified as the collaborative group process deepens our inquiry. **This**

seminar is part of the On the Same Page initiative: http://onthesamepage.berkeley.edu.

Americ Azevedo has pursued a life-long study of world religions and spirituality, along with a continued commitment to Socratic & Bohmian dialogue. Though his background is in Philosophy, his business and teaching career have brought him extensively into the world of information technology, with an emphasis on collaborative technologies, e-learning, and their cultural implications. He is especially concerned with how we can maintain our humanity in an increasingly technological world. He has been at U.C. Berkeley since Fall 2000, and is currently teaching Time, Money, and Love in the Age of Technology (Engineering 24, section 1) and Introduction to Computers (IDS 110).

FRESHMAN AND SOPHOMORE SEMINARS

Most of the following courses are limited to 20-25 students. First- and second-year students are given priority for enrollment. Most of these courses fulfill Letters and Science breadth requirements; consult *A Guide for Students in the College of Letters and Science: Earning Your Degree*. If a course is designated as requiring the consent of the instructor, or if you would like additional information, please contact the undergraduate assistant in the department offering the seminars.

Astronomy 39, Section 1
Intelligent Life in the Universe (1.5 units, P/NP)
Professor Marc Davis
Wednesday 4:00-5:30, 544 Campbell Hall, CCN: 06768

This freshman/sophomore seminar will discuss the question of life in the Universe from the astronomical and physical science perspective. What is it about the Earth that makes life possible? How does the evolutionary history of life parallel the evolution of the Earth itself? How many other planets in our galaxy would have a similar history? Is intelligent life in the Universe common, or do most planets fail to evolve life beyond the level of pond scum? Is intelligent life on Earth a short-term phenomenon, or will we survive into the distant future? We shall meet once a week, and the students will be expected to participate in the discussion. The primary reading for the course will be "Rare Earth" and "The Life and Death of Planet Earth" by Peter Ward and Donald Brownlee. Grades for the course will be based on classroom participation and on a term paper. Suitable topics for this paper would be a report of material in greater depth than covered in class, or a critical report on some (hardcore) science fiction novel that explores alien life in detail.

Professor Davis received his B.S. degree from MIT and his Ph.D. from Princeton. He has been a member of the Berkeley Astronomy and Physics faculty for eighteen years. His primary areas of research are cosmology and large-scale structure in the universe. This work involves large survey projects on telescopes of both small and large aperture, as well as computer simulations with very large supercomputers. Over the next several years his major research activity will be to lead a major new survey on the Keck telescope (the world's largest) that will study the clustering of galaxies in the distant universe. Professor Davis reads science fiction for relaxation and has seen his share of both the good and the bad.

Astronomy 39, Section 2
The Nature of Time (1.5 units, P/NP)
Professor Gibor Basri
Thursday 2:00-4:00, 501 Campbell Hall, CCN: 07108

What is Time? Do the past and the future co-exist? Is time absolute? Can there be time machines? Why are the laws of physics reversible in time on very small scales, yet the Universe has a clear arrow of time? Why do we sometimes call time the "fourth dimension"? This class will explore time as a subject of philosophy, physics, and science fiction. We will read some books, have a lot of discussion, and write a paper. You need not be a science student to enjoy this course (but must enjoy logical thinking at least some of the time). **Some phyics students, some science fiction fans, some philosophers (or those with that bent) and some artists would all be good! This seminar is part of the On the Same Page initiative: http://onthesamepage.berkeley.edu.**

Prof. Basri has taught Freshman Seminars many times before, usually entitled "The Science in Science Fiction." In honor of Stephen Hawking's visit to campus this spring (and his book "A Briefer History of Time"), he will give a slightly more focused seminar. He has been a Professor of Astronomy for 25 years, and often teaches Astro 10.

Comparative Literature 40, Section 1
Gender, Community and the Laboring Body (4 units, LG)
Ms. Irene Siegel
Tu Th 11:00-12:30, 6 Evans Hall, CCN: 17281

This course will critically examine a range of western-feminist paradigms regarding conceptions of self-in-community. We will examine the ways that western agendas have habitually overwritten the economic, social and cultural priorities of women in the third world. We'll re-think conceptions of gender, sexuality, the nation and religious identity as they are realized through a range of embodied praxes. These praxes will include sex-affective labor, participation in national resistance movements, and cultural and religious praxes, as they relate to questions of migration, labor flows and transnational revisionings of communal affiliations. We will pay special attention to the ways that many of these representations challenge central liberal-humanist assumptions of subjectivity, agency and liberation, re-presenting conceptions of community that complicate assumptions of "women's solidarity," as well as masculinist nationalist paradigms and "universalist" human rights agendas. Instead we will look at the ways that global economic forces and geopolitical location are inscribed in the gendered body, pressuring and reshaping communal affiliation. This seminar may be used to satisfy the Social and Behavioral Sciences requirement in Letters and Science.

Irene Siegel is a scholar and activist whose work focuses on intersections of religious, national, and gender identities in North and West Africa. She has recently completed a year of research in Cairo, Egypt.

Comparative Literature 41D
Forms of the Drama: Performing Gender: Gender Roles in Dramatic Traditions (4 units, LG)
Ms. Maya Fisher
Tu Th 2:00-3:30, 228 Dwinelle Hall, CCN: 17287

The theater, focused as it is on the performance of roles of all kinds, has always provided a particularly appropriate arena in which to explore the nature and boundaries of gender roles (and the possibilities of escaping from them)—even more so in those traditions in which women were not allowed on the stage. In this course, we will examine three such traditions:Sanskrit, Classical Greek, and Elizabethan drama. We will frame our discussion of these plays with selections from the dramatic theories of Abhinavagupta and Aristotle, considering the ways in which these differing approaches to viewing and evaluating drama have (or have not) resulted in different aesthetic experiences, and how these in turn have affected the presentation of gender. We will finish the semester by considering the ways in which two modern films, one from Bollywood and one from Hollywood, have or have not critically engaged their respective Western and Indian dramatic traditions. This seminar may be used to satisfy the Arts and Literature requirement in Letters and Science.

Maya Fisher is a graduate student instructor in the Department of Comparative Literature at UC Berkeley.

Computer Science 39J
The Art and Science of Photography: Drawing with Light (2 units, P/NP)
Professor Brian Barsky
Friday 12:00-2:00, 405 Soda Hall, CCN: 26242

On the first day of instructions please meet Professor Barsky at 12:10 at the Foothill Dinning Common at the long table in the main dining room near the windows at the opposite end of the room from where the food is dispensed. At 1:10 class will meet in 405 Soda Hall. Additional Food for Thought dining arrangements will be discussed in class.

This seminar explores the art and science of photography. Photographs are created by the control and manipulation of light. We will discuss quality of light for the rendering of tone, texture, shade, shadow, and reflection. The seminar examines the photographic process from light entering the lens through the creation and manipulation of the final image. Topics include composition and patterns, mathematics of perspective projection, refraction, blur, optics of lenses, exposure control, color science, film structure and response, resolution, digital image processing, the human visual system, spatial and color perception, and chemical versus electronic processing. Class assignments will be primarily based on color slides and secondarily on digital images. Although print film assignments are welcome, there are unfortunately no darkroom facilities available. Student work will be critiqued in class.To read an interesting article about this seminar, please see http://inst.eecs.berkeley.edu/~cs39j/fa06/engnews/. While this seminar is offered through the Computer Science Division, the focus of this seminar is not computer science. The focus of this seminar is photography. **The seminar is open to freshmen only. Students must have their own cameras to complete the course assignments. Students should have experience using a camera with manual control of exposure and focus that either has interchangeable lenses of different focal lengths or has a zoom lens. Students should have an interest in science (at least chemistry and physics). Student work will be critiqued in class. Participation and attendance at all classes is required to receive a "pass" grade, except for emergencies or prior arrangement with the instructor . Committee on Educational Policy states that faculty may decline to enroll students in a class who cannot be present at all scheduled activities. This seminar is part of the Food for Thought Seminar Series.**

Brian Barsky received his Ph.D. from the University of Utah in Computer Science and joined the UC Berkeley faculty in1981. His research interests are CAD/CAM, computer-aided geometric design and modeling, computer graphics, geometric modeling, visualization in scientific computing, and computer-aided cornea modeling and visualization.

Computer Science 39K, Section 1
Information Technology Goes to War! (2 units, P/NP)
Professor Randy H. Katz
Thursday 11:00-1:00, 320 Soda Hall, CCN: 26245

Necessity drives invention. In this seminar, we will examine the interwined historical development of information technology, broadly defined as computing, communications, and signal processing, in the twentieth century within the context of modern warfare and national defense. Topics include cryptography/cryptanalysis and the development of the computer; command and control systems and the development of the Internet; the war of attrition and the development of the mathematics of operations research; military communications and the development of the cellular telephone system; precision munitions and the development of the Global Positioning System. While we will endeavor to explain these developments in technical terms at a tutorial level, our main focus is to engage the students in the historical sweep of technical development and innovation as driven by national needs, and discuss whether this represents a continuing framework for the twenty-first century. **This course requires NO background in information technology or computer science -- ANY freshman or sophomore student at Berkeley has the necessary technical background. An interest in military affairs, economics, politics, history, and/or technology is essential. This is not a lecture class -- class meetings are organized around live play where students form teams and interact with each other to illustrate the concepts to be discussed. A desire to participate and "play along" is important -- no "wall flowers" please!**This seminar may be used to satisfy the Historical Studies requirement in Letters and Science.

Randy Howard Katz received his undergraduate degree from Cornell University, and his M.S. and Ph.D. degrees from the University of California, Berkeley. He joined the Berkeley faculty in 1983, where he is currently the United Microelectronics Corporation Distinguished Professor in Electrical Engineering and Computer Science. He is a Fellow of the ACM and the IEEE, and a member of the National Academy of

Engineering and the American Academy of Arts and Sciences. In May 2007, he will receive a Doctor of Philosophy degree (Honoris Causa) from the University of Helsinki. He has published over 250 refereed technical papers, book chapters, and books. His introductory computer engineering textbook, Contemporary Logic Design, has been used at over 200 colleges and universities, and is now in a second edition. He has supervised 43 M.S. theses and 34 Ph.D. dissertations (including one ACM Dissertation Award winner and nine women). His recognitions include thirteeen best paper awards, three best presentation awards, the Outstanding Alumni Award (Berkeley Computer Science Division), the CRA Outstanding Service Award, the Berkeley Distinguished Teaching Award, the Air Force Exceptional Civilian Service Decoration, the IEEE Reynolds Johnson Information Storage Award, the ASEE Frederic E. Terman Award, and the ACM Karl V. Karlstrom Outstanding Educator Award. In the late 1980s, with colleagues at Berkeley, he developed Redundant Arrays of Inexpensive Disks (RAID), a $15 billion per year industry sector. While on leave for government service in 1993-1994, he established whitehouse.gov and connected the White House to the Internet. His current research interests are Reliable, Adaptive Distributed Systems.

Earth and Planetary Science 39A
Geological Influences in California Society Today (2 units, LG)
Professors Harold Helgeson, Richard Allen and Mark Richards
MW 4:00-5:00, 145 McCone Hall, CCN: 19036

Field trip dates TBA. For additional field trip and meeting schedule details and updates, visit website TBA.

The theme of this course is the influence of geology in California society. As a freshman seminar, the class involves close personal interaction between students and senior faculty. For the interaction to work, it is essential that all enrolled students be prepared for the learning experience and to become engaged as active participants. Toward this end, the field trips are preceded by two or three one-hour lectures and two or three video presentations. Students are expected to attend one logistical meeting for the section of the field trip they are attending. Each student goes on only one field trip: Group 1 or 2. Each group will take one continuous four-day trip to visit geological and historical localities in various parts of California. Topics emphasized on the trips vary: societal impacts of dams, the Gold Rush, resource conservation, the geology of Yosemite as a national park, water resource issues, volcanic and seismic hazards, and glacial geology. Three nights will be spent camping out. Accordingly, each student will need to bring appropriate gear including a sleeping bag and a tent or make arrangements to share space in a tent. More details on equipment to bring and preparations to make will be supplied at the logistical meetings. **Enrollment is limited to ~60 freshman students with a wait-list of ~10. The class will be split into two field-trip groups of a size small enough to ensure an interactive seminar experience. This course is restricted to freshmen only. Any questions about this course should be directed to the coordinator, Professor Harold Helgeson.**

Harold C. Helgeson is a Professor of Geochemistry. For decades, he has taught and conducted research in theoretical geochemistry, thermodynamics, chemical petrology, solution chemistry, phase equilibria, kinetics, organic and biogeochemistry, and mass transfer in geochemical processes. For more information regarding Professor Helgeson, please visit his faculty page on the Earth and Planetary Science website.

Richard Allen is an Assistant Professor in the Department of Earth and Planetary Science. He is a seismologist interested in natural disasters. His research includes the determination and interpretation of earth structure using synthesized seismological techniques, the development of earthquake alarm systems, and assessment of natural hazard mitigation strategies in the US. He has also conducted research into verification of the comprehensive test ban treaty. For more information regarding Professor Allen, visit his faculty website at http://www.seismo.berkeley.edu/~rallen.

Mark Richards is a Professor in the Department of Earth and Planetary Science, and currently Dean of Physical Sciences. His research is focused on understanding the dynamics of planetary interiors, especially Earth, Venus, Mars, and the Moon. His research group carries out large-scale computational simulations,

performs laboratory fluid dynamics experiments, and synthesizes a wide variety of information on interior dynamics, including the gravity field, seismology, geochemistry, planetary imaging, and field investigations. Professor Richards also enjoys exploring Earth's surface by climbing, skiing, and white-water rafting whenever possible. For more information regarding Professor Richards, please visit his faculty web page on the Earth and Planetary Science website at http://eps.berkeley.edu/.

Electrical Engineering and Computer Sciences 39, Section 1
Physics For The Twenty-first Century (1.5 units, P/NP)
Professor Kam-Biu Luk
Wednesday 1:00-2:00, 45 Evans Hall, CCN: 69888

Physics is commonly considered the foundation of the pyramid of science. Besides revealing how Nature works, advances in physics offer us new tools that are beneficial to the other fields and can have profound impacts on our lives. This course will provide a broad overview of the status and prospects of physics at the beginning of the twenty-first century. **The intended audience would be students who are interested in science and are willling to read articles, and present and discuss current developments in physics.**

Kam-Biu Luk is a professor in the Physics Department. He is an experimentalist in particle physics. His current research interest is in neutrino physics, in particular investigating how neutrinos can transform from one type to the other as they travel.

Engineering 39B, Section 1
Introduction to Computational Engineering Science (1.5 units, P/NP)
Professor John Verboncoeur
Tuesday 3:30-5:00, 9 Evans Hall, CCN: 27645

This seminar introduces the program in Computational Engineering Science, a multidisciplinary field linking together elements of biology, chemistry, applied mathematics, physics, and all great areas of engineering. The course includes a series of lectures and guest speakers with topics ranging from multidisciplinary real-world projects to introductions to modeling and simulation. Small projects illustrate the progression from problem definition to modeling to simulation to interpretation and comparison with experiment and observation. There are no prerequisites. **Priority is given to Engineering Science students.**

John Verboncoeur is an Associate Professor-in-Residence in the Department of Nuclear Engineering. His research interest is computational physics.

Environmental Economics and Policy 39C
Using Economics to Analyze and Debate Hot Topics (2 units, P/NP)
Professor Jeffrey Perloff
Wednesday 2:00-4:00, 2320 Tolman Hall, CCN: 01218

The purpose of this seminar is to use microeconomics to analyze some of the most controversial political and social topics of the day. Starting at the first session, we will collectively choose these topics based on student interest. Possible topics include the economics of gay marriages, permitting seniors and others to buy pharmaceuticals abroad, allowing oil drilling in the Arctic National Wildlife Refuge, global warming, markets for pollution, outsourcing and the World Trade Organization, Enron and other management scandals, intellectual property rights and the Internet (downloading music and videos), tax refunds, U.S. immigration laws, and mad cow disease. The seminar is premised on the view that there are generally many sides to each topic and discussion and debate will be encouraged. We will collectively decide how many sessions to spend on each topic and how to run the seminar. Some weeks we may collectively analyze and discuss a topic (first assigning individuals or groups to gather different facts and opinions and then share this information during the session). Other weeks, we may debate topics, possibly holding the

debates twice and switching sides. Still in other weeks, we may write and exchange brief newspaper-column-like position papers. To prepare for sessions, students will gather information and opinions using the Internet or other sources, write up brief papers to share, and read materials written by classmates. **The student must be enthusiastic: willing to put in time outside of the seminar collecting information and willing to participate during the seminar. In addition, the student must have had at least an introductory microeconomics course such as EEP 1 (preferrably) or ECON 1.** This seminar may be used to satisfy the Social and Behavioral Sciences requirement in Letters and Science.

Jeff Perloff is chair and professor of Agricultural and Resource Economics at the University of California, Berkeley. His economic research covers industrial organization, marketing, labor, trade, and econometrics. His textbooks are Modern Industrial Organization (co-authored with Dennis Carlton) and Microeconomics. He has been an editor of Industrial Relations and an associate editor of the American Journal of Agricultural Economics and is an associate editor of the Journal of Productivity Analysis. He has consulted with nonprofit organizations and government agencies (including the Federal Trade Commission and the Departments of Commerce, Justice, and Agriculture) on topics ranging from a case of alleged Japanese television dumping to the evaluation of social programs. He has also conducted research in psychology. He is a fellow of the American Agricultural Economics Association. He received his B.A. in economics from the University of Chicago in 1972 and his Ph.D. in economics from the Massachusetts Institute of Technology in 1976. He was previously an assistant professor in the Department of Economics at the University of Pennsylvania.

Ethnic Studies 39A
The Cuban Revolution of 1959: Origins and Consequences (2 units, LG)
Professor Alex Saragoza
Wednesday 2:00-4:00, 122 Barrows Hall, CCN: 30744

This seminar will explore the causes of the Cuban Revolution and its outcomes, taking into consideration the intersections of class, gender, politics, race and region on the island. The role of the United States and its relationship to Cuba before and after the revolution will be central to the content of the seminar, including the implications of Cuba's ties to the former Soviet Union prior to 1989. Cubans in the U.S. will figure prominently in the discussion of the post-revolutionary period. The seminar will also delve into the key personalities of the revolution, notably Fidel Castro and Ernesto "Che" Guevara. The seminar will be interdisciplinary, using diverse sources such as historical texts, literary works, films/documentaries, music and dance. This seminar may be used to satisfy the Historical Studies or Social and Behavioral Sciences requirement in Letters and Science.

Alex M. Saragoza formerly served as Chair of the Center for Latin American Studies at Berkeley for four years, and he also served as the campus Director of International Education programs for three years; he also led two study tours to Cuba for UC Berkeley Extension in 2002 and 2003 (before the current travel restrictions were imposed by the White House); he has visited Cuba on several occasions and is currently conducting research on a comparative study of Mexican and Cuban tourism. A specialist on modern Mexico, he is an associate professor of history in the Department of Ethnic Studies.

History 39S
Alexander the Great: History and Legend (4 units, LG)
Professor Emily Mackil
Wednesday 2:00-4:00, 123 Dwinelle Hall, CCN: 39309

Alexander the Great, King of Macedon (356-323 BCE) is one of the most famous, and complex, figures of Greek antiquity. Bringing under his rule virtually all of Greece as well as the continent of Asia from the Aegean coast to the Indus River in modern Pakistan, the power he achieved in his thirteen year reign was unrivalled, and the world he left behind him was dramatically altered. In the process of creating his vast empire, he fought, bargained, drank and talked with Greeks, Macedonians, Egyptians, Persians, Jews and

Indians. In this course we shall read the ancient Greek historical accounts of his life, death and deification, and the artistic responses to Alexander's life through media such as coinage and portraiture. We shall then study several different texts from the legendary tradition of his life, known as the "Alexander Romance," written by Greek, Persian, Jewish and French authors from antiquity to the Medieval period. In this tradition Alexander variously bows down before the Jewish high priest, explores Africa and visits the very gates of the Garden of Eden, becomes a deep sea diver and a cosmonaut. We shall consider history, biography, portraiture, myth and fiction as different modes of recording and thinking about the past, and explore the ways in which Alexander's brief imperial reign affected the lore and memory of numerous non-Greek peoples more than a millennium after it had drawn to a close. The course has three main goals: to study in depth the history of Alexander's life and accomplishments; to analyze the generic distinctions between history, biography, myth and fiction and to think about the different needs they serve; and, finally, to develop the ability to read and compare a variety of historical sources with a critical eye. **THE COURSE IS INTENDED FOR sophomores and freshmen with a lively interest (but not necessarily any experience) in the field of history broadly construed, and in the ancient Greek world MORE PARTICULARLY.**This seminar may be used to satisfy the Historical Studies or Social and Behavioral Sciences requirement in Letters and Science.

Emily Mackil is an historian of the ancient Greek world. Her research interests center around ancient state formation, the Greek economy, cities, and the social and political organization of Classical and Hellenistic Greece. She has a PhD from Princeton University and a BA from the University of Oxford. She has spent several years in Greece conducting research, which has taken her to some of the most distant corners and deserted mountaintops of modern Greece; she knows the landscape well and loves it even more. She has a lively interest in Alexander the Great and the weird and wonderful complex of legendary and romantic traditions, in many cultures, which his brief but remarkable life sparked.

History 39T
Asian Classics Live! (4 units, LG)
Professor Michael Nylan
Thursday 2:00-4:00, 122 Latimer Hall, CCN: 39312

This course seeks to introduce first- and second-year students to some of the major classics of the Chinese tradition (which were studied throughout all of East Asia, as well as Vietnam, Cambodia, and Laos). These classics include the Analects of Confucius, Laozi's Daode jing (Way and its Power); Zhuangzi, Mencius, Xunzi, and the Platform Sutra. Many have noted that the Analects is the "most studied book" in all of human history (implicitly comparing it with the Bible, with Plato, or with Aristotle). Zhuangzi is quite simply the most brilliant rhetorical piece in the classical Chinese language. (Amazingly, one translation manages to convey a goodly part of that brilliance). Together, the Mencius and the Xunzi cornered the market on notions of just rule. And The Platform Sutra is the classic text of Zen (Chan in Chinese). Each classic will be introduced over two successive weeks. Students will be required to write short close analyses of certain passages (2 pages each) every other week; and one five-page paper on a topic of their own choosing. There will also be a mid-term testing recognition of key terms. This seminar may be used to satisfy the Arts and Literature or Historical Studies requirement in Letters and Science.

Professor Nylan's interests are in early China: seven centuries of Warring States through Eastern Han (475 BC-AD 220), with an emphasis on the sociopolitical context, aesthetic theories and material culture, and belief. For more information on Professor Nylan visit http://history.berkeley.edu/faculty/Nylan/

History 39U, Section
The Renaissance— History through Art (4 units, LG)
Professor Bruce Elliott
Tuesday 2:00-4:00, 201 Giannini Hall, CCN: 39315

Sparked by new interest in Classical civilization, the fifteenth century witnessed an unprecedented creative flowering in philosophy, art and political culture. In this course we examine the political, economic and

social environment of Northern Italy that gave rise to the Renaissance. We trace the development of the Renaissance impulse from its beginnings in late medieval Florence and Venice through the lavish exuberance of the High Renaissance of Papal Rome. Unlike most history courses, which tend to emphasize written texts, this course utilizes artwork as its main primary source material. The approach is not Art History, but rather using art to help tell the historical story. Artists were acute and sensitive observers; they can serve as expert informants conveying the spirit of their times. With the Renaissance, we see great works of art—paintings, sculpture, even architecture—reflecting the important shifts in outlook that marked the turn in European society from medieval towards the modern. This seminar may be used to satisfy the Historical Studies or Social and Behavioral Sciences requirement in Letters and Science.

Dr. Elliott teaches courses in early modern European history at UC Berkeley and Stanford Continuing Studies. He has a strong interest in the dual role of creative expression in both reflecting and influencing historical change.

History 39V
Piracy and History in the British Empire: the Golden Age and its Legacy (4 units, LG)
Lecturer Carolyn Knapp
Monday 12:00-2:00, 2525 Tolman Hall, CCN: 39318

Although pirates have existed since people began transporting goods by water, the first two or three centuries after Europeans arrived in the western hemisphere were the "golden age" of piracy, and it is this image of the seventeenth-century pirate (like Captain Hook or Jack Sparrow) that usually springs to mind when the word appears. This seminar is a historical, political, social and cultural introduction to that golden age and its romanticization in literature and on film. We will explore the social and political world of the pirates and the lives of some notable ones such as Henry Morgan, Captain Kidd, and Ann Bonney, and we will look closely at the historical and political conditions that fostered piracy and those that led to attempts to suppress it. Thus, this course is not just about the pirates but also about the wider world in which they lived. The primary focus will be on piracy within the British empire, but we will be touching on piracy in other areas. Scholarly writing about "bandits at sea," contemporary accounts of pirates, their trials, their captives, their literary treatment by such authors as Robert Louis Stevenson, and films from The Black Pirate (1926) to Pirates of the Caribbean: Dead Man's Chest (2006) will form the foundation of our inquiry. As the purpose of a seminar is to exchange ideas, class participation will be a substantial component of the grade. Short weekly writings about the readings or films and two or three longer papers will balance the oral requirement. **This course is designed for freshmen and sophomores who are interested in exploring pirates and piracy from a historical perspective. While Pirates and the British Empire is an opportunity to discover the scholarly world of early modern European and American history, and particularly the burgeoning field of Atlantic studies, it is also a good grounding for those who are interested in the phenomenon of piracy in other times and places, including the twenty-first century international scene. Students should expect to read about 150 pages a week and to do some research in electronic and microfilmed primary sources. A nodding acquaintance with seventeenth- and eighteenth-century European and American history is helpful, but it is not a requirement.**This seminar may be used to satisfy the Historical Studies or Social and Behavioral Sciences requirement in Letters and Science.

Carolyn Knapp is an instructor in early modern British history and in the history of colonial and Revolutionary America. She received her Ph.D. from U.C. Berkeley in 1998, writing her dissertation on the British response to the idea of American independence. She was a visiting professor at the University of Nevada Reno for three years and has taught lecture courses in early American history and reading and research seminars in early modern Atlantic history at Berkeley. Her scholarly interest in pirates was sparked by her research in the British military correspondence of the American Revolution, and she has directed several Berkeley senior history theses on pirate subjects.

History 39Y
Blasphemy, Anti-clericalism, Heresy, ca. 1500-1900 (4 units, LG)
Professor Victoria Frede
Tuesday 12:00-2:00, 2227 Dwinelle Hall, CCN: 40053

This Freshman and Sophomore seminar will look into the rich historical literature of three very closely connected phenomena: blasphemy, anti-clericalism, and heresy. Our readings will take us to several European countries, from Italy to Russia, from the sixteenth to nineteenth centuries. We will study how and why states and societies drew lines between acceptable and unacceptable forms of religiosity, and how they attempted to regulate, police, or retaliate against people who strayed from official church doctrine and ritual. Another topic of interest will be what prompted people to make blasphemous or anti-clerical statements, and how the meaning and nature of blasphemy, anti-clericalism and heresy changed over time. Finally, we will discuss how historians handle these concepts and how they define their topics of interest. This seminar may be used to satisfy the Historical Studies or Social and Behavioral Sciences requirement in Letters and Science.

I was born to German parents in Berkeley, California, but grew up on the east coast. As an undergraduate, I studied at Cambridge University in England and then started graduate school at the School of Slavonic Studies in London, England. I returned to Berkeley to finish my doctoral work. Since completing my dissertation, I spent one year as a postdoctoral fellow at Columbia University in New York City and two years teaching at East Carolina University. My main research interest is in nineteenth-century Russian intellectual history.

Industrial Engineering and Operations Research 39B, Section 1
Enterprise Engineering (2 units, LG)
Professor Ilan Adler
Tuesday 4:00-6:00, 116 Haviland Hall, CCN: 41003

Industrial Engineering and Operations Research has grown well beyond its roots in manufacturing and branched into virtually all areas of human enterprise. Strategic breakthroughs have come from applying the risk-analysis and resource-allocation tools of IEOR to modern industries that include sports, finance, energy, service, health care, agriculture, communications, and law enforcement. IEOR operates on the interface between information and decisions and is widely considered to be ideal technical training for engineers who want future careers in designing and managing the complex, information-driven enterprises of the twenty-first century.

This course will introduce basic methods and applications of industrial engineering and operations research (IE\OR). We will explore approaches for solving interesting and diverse problems, in areas ranging from business to public policy to sports. Students will form teams and develop strategies for attacking these problems. We will also spend time discussing IE\OR approaches to solving these problems systematically. The semester will conclude with a final project that demonstrates some of these IE\OR strategies on a practical problem. Students will be given the opportunity to apply some IEOR techniques to decisions that directly affect their future. Students who are not declared IEOR majors but who are considering it as their possible field of expertise are encouraged to take this seminar.

Professor Adler holds a B.A in Economics and Statistics from the Hebrew University in Israel, M.Sc in Operations Research from the Technion in Israel and Ph.D in Operations Research from Stanford. His research interests are in optimization theory, financial engineering and combinatorial probability models. For more information regarding Professor Adler, please visit his faculty web page at http://www.ieor.berkeley.edu/People/Faculty/adler.htm.

Italian Studies 39C
"The Idea of a Christian Poet": Dante and T.S. Eliot (1.5 units, P/NP)
Professor Steven Botterill
Tuesday 3:30-5:00, 109 Morgan Hall, CCN: 47378

The American-born British poet Thomas Stearns Eliot (1888-1965) was the dominant figure in English-language poetry in the middle decades of the twentieth century, and his influence remains considerable today, even though his legacy is increasingly contested by contemporary writers and critics. Eliot's work is pervaded by his interests in religion, literary tradition, and cultural history; and in all these areas he drew deeply on the example of the medieval Italian poet Dante Alighieri (1265-1321), author of the "Divine Comedy." In this course we will examine closely the relationship between the greatest poet of the European Middle Ages and (arguably) the greatest of our own time. We will read all Eliot's major poems and some of his minor ones, alongside selections from the "Divine Comedy" and the "Vita nuova [New Life]," Dante's first collection of lyric poems, in English translation. We will also look at some of Eliot's own extensive critical writings on Dante, as we seek to understand how religious belief and poetic art come together in the work of both authors to offer an articulate and provocative challenge to the assumptions of an increasingly secular and prosaic culture. **No religious commitment of any kind is required for participation in this course, but students will be expected to have a serious interest in religion as a cultural phenomenon and some experience in the close reading of poetry.**

Professor Botterill holds degrees in Modern & Medieval Languages from Cambridge University and has taught medieval Italian literature, especially Dante, at Berkeley since 1986. He has published widely in the field and is currently editor of the scholarly journal "Dante Studies." He discovered Eliot's poetry in high school and has been captivated by its challenges and rewards ever since.

Journalism 39H
Satellite Radio: Breaking the Bonds of Earth (1.5 units, P/NP)
Professor William J. Drummond
Friday 12:30-2:00, 104 North Gate Hall, CCN: 48006

Dramatic changes have taken place in the listening habits of consumers. Traditional AM and FM radio face a challenge from programming sources literally not of this earth. Satellite radio entered the scene only about five years ago and has made significant inroads. Two services are available: XM and Sirius. Both services offer a wider selection of music as well as talk and entertainment programming than terrestrial radio. This seminar will listen to and critique satellite radio. Students should be prepared to listen critically and write about their reactions to what they are hearing. The class will also examine other advances in audio technology. The goal is to develop an understanding of market forces in present-day radio programming.

William J. Drummond joined the faculty in 1983 after a career in public radio and newspapers. He continues to produce occasional public radio reports and documentaries. From 1979 to 1983 he worked in Washington for National Public Radio, where he was the first editor of Morning Edition before moving on to become National Security Correspondent. He has produced documentary-length radio programs on a wide range of subjects: Native Americans and welfare reform; jazz diva Betty Carter; Allensworth: the pioneering Negro colony in the California Central Valley; a profile of a psychiatrist whose specialty is interviewing serial killers; the early Jim Crow days in Las Vegas; an examination of why Americans are turned off by the political system; and a look at the tension between Malcolm X and Martin Luther King, as seen through the eyes of youth. His honors include a 1989 citation from the National Association of Black Journalists for "Outstanding Coverage of the Black Condition," the 1991 Jack R. Howard Award for Journalism Excellence, and a 1994 Excellence in Journalism Award from the Society of Professional Journalists' Northern California Chapter for an advanced reporting class experiment in civic journalism. He was a member of the planning committee that created the Public Radio International program The World.

Journalism 39I
Street Photography (2 units, LG)
Lecturer Mimi Chakarova
Wednesday 12:00-3:00, B1 North Gate Hall, CCN: 48008

January 17 - March 7, 2007

This course will explore documentary street photography in the Bay Area. Students will be given weekly assignments in addition to a final project.

Mimi Chakarova received her BFA in photography from the San Francisco Art Institute and her MA in visual studies from UC Berkeley. She has had numerous solo exhibitions of her documentary projects on South Africa, Jamaica, Cuba, Kashmir and Eastern Europe. She teaches photography at UC Berkeley and Stanford University. She is the recipient of the 2003 Dorothea Lange Fellowship for outstanding work in documentary photography and the 2005 Magnum Photos Inge Morath Award for her work on sex trafficking. For more information regarding Mimi Chakarova, please visit http://journalism.berkeley.edu/faculty/chakarova/ and http://www.mclight.com/.

Mathematics 39A, Section
Teaching Mathematics in Schools (2 units, P/NP)
Mr. Emiliano Gomez and Ms. Jolanta Walukiewicz
Monday 4:00-6:00, 71 Evans Hall, CCN: 54423

We will discuss mathematics topics that are hard for students in K-12, interesting math problems from K-12, and issues pertaining to the practice of teaching mathematics at pre-collegiate levels. **We want students who are truly interested in exploring the possibility of becoming mathematics teachers, as well as in majoring in math or science.**

Emiliano Gomez has a PhD in mathematics from UC Berkeley (2000). For the past six years, he has been involved in the professional development of mathematics teachers, and in the mathematics of K-12 schools. He is also director of the workgroup for the UC/CSU Mathematics Diagnostic Testing Project for the UC Berkeley site.

Jolanta Walukiewiczis a math teacher at El Cerrito High School. For many years she has been active as a leader in professional development of math teachers, participating in and/or leading many courses, conferences, and seminars. She is also a member of the workgroup for the UC/CSU Mathematics Diagnostic Testing Project.

Nuclear Engineering 39A
Issues in Nuclear Science and Engineering (2 units, LG)
Professor Per Peterson
MW 3:00-4:00, 3106 Etcheverry Hall, CCN: 64006

This seminar is an introduction to technical, social, institutional, and ethical issues that arise in the field of nuclear engineering: nuclear reactions and radiation, radiation protection, nuclear energy production and utilization, the nuclear fuel cycle, reactor safety and risk, controlled fusion, nuclear waste, medical and other applications of radiation, and nuclear nonproliferation and arms control. This seminar may be used to satisfy the Physical Sciences requirement in Letters and Science.

Per F. Peterson is Professor and Chair of the Department of Nuclear Engineering.

Optometry 39B
The Developing World: Profound Challenges, Needs, and Opportunities—An Example Applied to Eye Care in India (2 units, P/NP)
Professor Jay Enoch
TuTh 2:30-4:00, 394 Minor Hall, CCN: 65506

This seminar will meet the first five weeks of the semester. There are also two late afternoon and evening sessions which will be added towards the end of the period of time in which the class meets.

The developing world and its profound problems will remain with us throughout our lifetime. Continued population growth, rapid aging of these populations and provision of care for the aged; questionable adequacy of harvests, greatly increased health needs (for example, the HIV-AIDS epidemic); often inadequate schooling; the caste system, and religion and the family as foci of society; the roles and needs of men and women; and many other problems all contribute to the complex of issues that need to be faced in these environments. While these problems are enormous, individuals (singly or working together) can make a difference. There are opportunities, and these people are both cooperative and willing to share in their development. One must limit oneself to a defined problem set. In this symposium, we will explore this complex of issues, and the teacher will define those things he was/is able to achieve (and problems and difficulties encountered) in the field of eye and vision care during more than a decade of active participation in India. With India's population passing the one billion mark, the importance of addressing the very great needs of India and other developing countries are emphasized. Individuals will be encouraged to participate actively in discussions, and to examine situations in other countries to better understand both existing problems and opportunities. Students will be asked to prepare oral presentations and written materials on related issues of personal interest. This course is also listed as South and Southeast Asian Studies 39C (CCN: 83112). This seminar may be used to satisfy the International Studies or Social and Behavioral Sciences requirement in Letters and Science.

Dean Emeritus and Professor of the Graduate School Jay M. Enoch maintained a research laboratory in Madurai in Tamil Nadu State for many years. In 1985, he helped start a successful college in Madras (Chennai) in Tamil Nadu, and he is currently involved in developing graduate programs at the latter institution to help train additional teachers/researchers, and is participating in the organization of additional new college programs in India.

Philosophy 39L, Section
Perception and Reality (3 units, LG)
Professor Hannah Ginsborg
Wednesday 2:00-5:00, 108 Wheeler Hall, CCN: 67229

One of our main ways of finding out about the world is through perceptual experience of it: for example, through seeing, hearing and touching things. But there is a great deal that is puzzling about what perceptual experience is, and about how (or indeed, whether) it makes knowledge possible. Some of the puzzles are best dealt with in experimental psychology and physiology, for example by looking at how the sense organs and brain function in perception. But some of the questions that arise about perception and its relation to knowledge are primarily philosophical, rather than psychological or physiological. Many important philosophers, including Aristotle, Descartes and Kant, have dealt with these questions, and indeed have treated them as central in understanding the nature of reality and our knowledge of it. Moreover, questions about perception remain central in contemporary philosophy of mind and theory of knowledge. In this seminar we will read and discuss a number of philosophical texts dealing with perception and knowledge, some classical and some more recent. Because the topic is a large one, we will not be trying to cover it comprehensively, but rather to study carefully a few selected texts. While the texts will be difficult and require careful reading, the class will not presuppose any prior knowledge of philosophy; it is intended to give students an opportunity to get acquainted with philosophy in a small class with a lot of emphasis on discussion. Students taking the course should be prepared to participate actively in class discussion. They will be required to write a short paper each week and a longer final

paper at the end of the semester. **Admission to the course is by the consent of the instructor only, and is restricted to freshmen and sophomores. Those wishing to take the course will need to submit an application including a short essay (between one and two pages) on a topic set by the instructor. If you are interested in enrolling, you should contact the instructor by email before Friday, December 1. Emails should be addressed to ginsborg@berkeley.edu and should include "Philosophy 39" in the subject line. Those sending emails before the deadline will receive an application form and the essay topic by email, and will have about a week to send back the application. Students will be informed by mid-December whether they are admitted to the course. Students who are admitted to the course and who attend the first class meeting will receive a class entry code and will be able to enroll through TeleBEARS during the first week of classes.** This seminar may be used to satisfy the Philosophy and Values requirement in Letters and Science.

Hannah Ginsborg is a Professor of Philosophy. She received a B.A. from Oxford in 1980 and a Ph.D. from Harvard in 1989. Her interests include the history of philosophy (especially Kant) , epistemology and the philosophy of mind.

Physics 39, Section 2
Teaching Science (2 units, P/NP)
Professor Roger Falcone, Mr. John Erickson and Dr. Gregory Schultz
Friday 12:00-2:00, 200 LeConte Hall, CCN: 70657

Later in the semester, students will also meet two hours per week in a K-12 classroom and one to two hours per week in preparation/discussion with teachers at dates and times to be arranged in a seminar meeting.

The seminar is for students who are interested in improving their ability to communicate scientific knowledge, and considering a career in teaching science in K-12 schools. It will combine instruction in inquiry-based science teaching methods and learning pedagogy with supervised teaching activities in a local school. Students will practice, with support and mentoring, communicating scientific knowledge through presentations and hands-on activities. The seminar builds on the successful Communicating Science series for upper-division students, which is taught in collaboration with the Lawrence Hall of Science. This seminar is an introduction to a new program for undergraduates called California Teach, which is described at http://calteach.berkeley.edu/. It is the first in a series of courses (to be developed) that will prepare undergraduate students in the sciences, mathematics, and engineering for careers in teaching at the K-12 level, while supporting their regular programs for the bachelor's degree in these subjects.

Professor Falcone has been teaching at UC Berkeley in the Physics Department since 1983 and served as Department Chair from 1995 to 2000. He is also affiliated with the Energy and Resources Group on campus, Lawrence Berkeley National Laboratory, and the Stanford Linear Accelerator Center. His research group conducts experiments in atomic, molecular, and solid state physics using ultrafast-pulse lasers and x-rays. His other activities include working with Berkeley's Lawrence Hall of Science and other groups on kindergarden-to-twelfth-grade education issues, and occasional studies related to national security.

Mr. John Erickson has been teaching at the Lawrence Hall of Science since 1986. He has taught in all subject areas at LHS, with an emphasis in physical sciences and astronomy, for students at the level of preschool through adult. His work includes curriculum development and teacher training in the content and methods of LHS curriculum materials.

Dr. Greg Schultz received his PhD from the UCLA Astronomy & Astrophysics program in 1999, and since then has been with UC Berkeley's Center for Science Education at the Space Sciences Lab (CSE@SSL; http://cse.ssl.berkeley.edu/). He came to Berkeley as a National Science Foundation (NSF) Science Education Postdoctoral Fellow, and is now on staff as an Education/Outreach Scientist and Teacher

Educator. His work has been primarily focused on teacher education, teacher professional development, and science curriculum development, in particular within the subjects of astronomy, space science, physics, and earth science. He works closely in these regards with colleagues at the Lawrence Hall of Science.

Political Science 39A
Truths, Lies, and Politics (2 units, P/NP)
Professor Norman Jacobson
Wednesday 12:00-2:00, 791 Barrows Hall, CCN: 71856

To help us get started thinking about what—philosophically, ethically, and politically—will be at stake for us in the seminar:
A. "By a lie a man throws away and as it were, annihilates his dignity as a man." - Immanuel Kant;
"Circumstances and life are such that we must all sometimes tell a lie: just as we wear trousers because we don't choose that everybody shall see our nakedness." - D. H. Lawrence;
B."…there is no absurdity, however strange it may sound, in that saying of the ancient Father 'I would not tell a willful lie to save the souls of the whole world'." - John Wesley;
"What harm would it do, if a man told a good strong lie for the sake of the good and for the Christian church…a lie out of necessity, a useful lie, a helpful lie, such lies would not be against God, he would accept them." - Martin Luther;
C. "While the people retain their virtue, and vigilance, no administration, by any extreme of wickedness or folly, can very seriously injure [them]." - Abraham Lincoln;
"The great masses of the people…will more easily fall victims to a big lie than to a small one." - Adolf Hitler.
Our theme will be the compatibility of Truth and Politics in three historical periods:
I. The Ancient World
II. The Renaissance
III. Contemporary Life
Reading:
I. Plato, Apology and Crito (in one volume), and The Republic (selections); Dostoyevsky, "The Legend of the Grand Inquisitor," in The Brothers Karamazov;
II. Machiavelli, The Prince and Mandragola; More, Utopia (Book I); Shakespeare, Richard III;
III. Orwell, 1984 Hannah Arendt, "Lying in Politics," in Crises of the Republic Albert Camus, The Stranger; Milan Kundera, The Book of Laughter and Forgetting.
This seminar may be used to satisfy the Social and Behavioral Sciences or Philosophy and Values requirement in Letters and Science.

Norman Jacobson is a Professor of Political Science, Emeritus, UC Berkeley. He taught in the department from 1951-1989. He has been a Consulting Professor at Stanford University from 1995 to the present. He was named California Professor of the Year in 1988. Professor Jacobson earrned his Ph.D. from the University of Wisconsinin 1951. His areas of interest include political theory, the history of ideas (European and American), and literature and politics. His current teaching includes American Political Theory, Modern European Theory, Innocence and Politics, and Truth and Politics.
He has published on European and American Thought, Renaissance to the present, including Machiavelli, Hobbes, Rousseau, Dostoyevsky, Orwell, Camus, Paine, Thoreau, and Lincoln, and co-produced both film and theater.
His most recent publications are "Escape from Alienation," Representations, Fall, 2003; and "'Damn Your Eyes!", Thoreau on (Male) Friendship in America," in D. Batthory and M. Schwartz, Eds., Friends and Citizens (2001).

Political Science 39C
How Rich Countries Can Stay Wealthy While Emerging Markets Find Their Place: National Adjustments to the Global Economy (3 units, LG)
Professor John Zysman
Wednesday 10:00-12:00, 186 Barrows Hall, CCN: 71859

The first weeks will consider the policy choices and political questions posed by the competitive dynamics of the global economy. The texts and readings will create a common vocabulary and analytic frame. A student subscription for the semester to The Financial Times of London, perhaps the best political and economic newspaper in the world, will provide the flow of topical material. The focus of the course will then be on topics chosen by the seminar and researched by the students. Course requirements will include a written assignment covering the initial month's reading, a research project, and active class participation. Where possible, students will be put into research teams working with a graduate student with a similar interest. Students though will still have their own projects for which they are responsible. **Class enrollment will be limited to six sophomores. Those interested should submit a transcript (unofficial is fine) and two paragraphs explaining why these issues and topics interest them. Also include with your application your major and year. Materials should be submitted in a Word document to Cynthia Okita by email at brie2brie@gmail.com. A brief interview to select the final students may be required. Please direct any inquiries to brie2brie@gmail.com.** This seminar may be used to satisfy the Social and Behavioral Sciences requirement in Letters and Science.

John Zysman, Professor of Political Science, is also co-director of the Berkeley Roundtable on the International Economy (BRIE). He is the author and editor of a variety of books on the political economy of the advanced countries, most recently How Revolutionary Was the Digital Revolution: National Responses, Market Transitions, and Global Technology. He has over the years worked on policy issues in Europe, Asia, and the United States.

Public Health 39E
The Medical Detectives (2 units, P/NP)
Professor Arthur Reingold
Wednesday 10:00-12:00, 2320 Tolman Hall, CCN: 75706

Have you read newspaper stories about SARS or the bird flu in Hong Kong or Ebola virus in Africa or the recent E. coli outbreak from bagged spinach? Have you wondered who investigated these public health problems and how they did it? In this course, you will learn who these medical detectives are and the ins and outs of how they solve these real-life mysteries. This seminar may be used to satisfy the Social and Behavioral Sciences requirement in Letters and Science.

Professor Arthur Reingold is a licensed physician who has devoted the past twenty years to studying infectious diseases and how to prevent them. He worked at the Federal Centers for Disease Control and Prevention in Atlanta for eight years before joining the faculty at UC Berkeley and UCSF in 1987. He has been involved in investigations of Legionnaires' Disease, toxic shock syndrome, epidemic meningitis in Africa and Nepal, and numerous other infectious diseases in the United States and in various countries in Latin America, Africa, and Asia.

Social Welfare 39B, Section 1
Propaganda in the Helping Professions (2 units, P/NP)
Professor Eileen Gambrill
Wednesday 10:00-12:00, 201 Haviland Hall, CCN: 81153

This seminar is for students who are interested in learning about the varieties and consequences of propaganda in the helping professions. Propaganda is defined à la Ellul (1965) as encouraging beliefs and actions with the least thought possible. Propaganda, and its reflections in fads and pseudo-science in the

helping professions such as social work, psychiatry and psychology, has become so pronounced that there are now backlashes against it. For example some medical schools offer courses designed to help students to resist the influence of propaganda pitches by pharmaceutical companies. The course will include a brief historical overview of propaganda. Students will have an opportunity to apply class content regarding propaganda to current controversies in the helping professions. **Enrollment is limited to twenty freshmen only.**This seminar may be used to satisfy the Social and Behavioral Sciences requirement in Letters and Science.

Eileen Gambrill is the Hutto Patterson Professor of Child and Family Studies in the School of Social Welfare. Her areas of interests include professional decision making, professional education, and ethical issues in the helping professions. Recent books include Critical Thinking in Clinical Practice (2005) second edition (Wiley), and Social Work Practice: A Critical Thinker's Guide(2006)(2nd Ed.) Oxford University Press. She is a licensed psychologist in the state of California.

South and Southeast Asian Studies 39C
The Developing World: Profound Challenges, Needs, and Opportunities—An Example Applied to Eye Care in India (2 units, P/NP)
Professor Jay Enoch
TuTh 2:30-4:00, 394 Minor Hall, CCN: 83112

This seminar will meet the first five weeks of the semester. There are also two late afternoon and evening sessions which will be added towards the end of the period in which the class meets.

The developing world and its profound problems will remain with us throughout our lifetime. Continued population growth, rapid aging of these populations and provision of care for the aged; questionable adequacy of harvests, greatly increased health needs (for example, the HIV-AIDS epidemic); often inadequate schooling; the caste system, and religion and the family as foci of society; the roles and needs of men and women; and many other problems all contribute to the complex of issues that need to be faced in these environments. While these problems are enormous, individuals (singly or working together) can make a difference. There are opportunities, and these people are both cooperative and willing to share in their development. One must limit oneself to a defined problem set. In this symposium, we will explore this complex of issues, and the teacher will define those things he was/is able to achieve (and problems and difficulties encountered) in the field of eye and vision care during more than a decade of active participation in India. With India's population passing the one billion mark, the importance of addressing the very great needs of India and other developing countries are emphasized. Individuals will be encouraged to participate actively in discussions, and to examine situations in other countries to better understand both existing problems and opportunities. Students will be asked to prepare oral presentations and written materials on related issues of personal interest. This course is also listed as Optometry 39B (CCN: 65506). This seminar may be used to satisfy the International Studies or Social and Behavioral Sciences requirement in Letters and Science.

Dean Emeritus and Professor of the Graduate School Jay M. Enoch maintained a research laboratory in Madurai in Tamil Nadu State for many years. In 1985, he helped start a successful college in Madras (Chennai) in Tamil Nadu, and he is currently involved in developing graduate programs at the latter institution to help train additional teachers/researchers, and is participating in the organization of additional new college programs in India.

South and Southeast Asian Studies 39G
"Think Gender" in Indian Short Stories (2 units, LG)
Lecturer Kausalya Hart
Friday 8:00-10:00, 156 Dwinelle Hall, CCN: 83115

In this seminar, students will read fifteen short stories from various languages of India translated into English. The stories will describe the relationships between men and women and how the society looks at the roles of men and women in Indian culture. The students will be expected to read the stories and to discuss and critique them in class. They will also be expected to write two five-page research papers. This seminar may be used to satisfy the Arts and Literature or Social and Behavioral Sciences requirement in Letters and Science.

Kausalya Hart (M.A., Annamalai University, 1962) is the author of Tamil for Beginners, Tamil Madu, and Tamil Tiraippadam (advanced Tamil textbooks). She has prepared numerous Tamil language teaching aids (including a collection of Tamil movie videos), and a dictionary for modern Tamil. Her current research involves the preparation of a dictionary of Tamil inscriptions. Her interests include Tamil literature, grammar, and inscriptions.

Undergraduate and Interdisciplinary Studies 39B
Archival Research: Working with Primary Sources in the Humanities, Sciences, and Engineering (1.5 units, LG)
Professor James Casey, Mr. David Farrell and Mr. Peter Hanff
Wednesday 3:00-4:30, 120 Bancroft Library, 2121 Allston Way, in the Bancroft Conference Room (just west of campus), CCN: 89006

This seminar offers undergraduates from any major the opportunity to perform original research using primary sources from the archives of the Bancroft Library, or from other specialized libraries at the University or in the San Francisco Bay Area. Students will have direct access to the unique collections of original manuscripts, papers, early printed editions, photographs, paintings, and other items in the Berkeley archives. These cover literary, historical, philosophical, social, cultural, scientific, engineering, and artistic areas, spanning many centuries and different cultures. Bancroft has an especially rich collection of primary sources from California during the nineteenth and twentieth centuries (e.g., original documents, drawings, and paintings from the Gold Rush era; reports, engineering drawings, and photographs for the Golden Gate and Bay Bridge projects; an extensive archive on the poetry and fiction of the Beat Generation; and the papers of the Sierra Club and the Free Speech Movement). In the past, we have found that the seminar works best when our students come from diverse cultural and academic backgrounds and are eager to engage in academic dialogue. We are particularly interested in attracting students from the sciences and engineering in addition to the humanities and arts, so that problems can be discussed from different angles, and interdisciplinary collaborations can take place. After some introductory sessions on the use of primary documents and artifacts in research, we will explore the Bancroft archives in areas of interest to the group. By mid-semester, several topics will be identified and participants will subsequently work individually or in pairs to pursue in-depth research on a topic of their own choosing and based on archival materials. Creativity and ingenuity in research are encouraged and everyone is expected to participate vigorously in the discussions. Library specialists will provide technical assistance. A presentation and research report will be due at the end of the semester. **Enrollment is limited to sixteen students and attendance is mandatory.**

James Casey is a Professor in the Mechanical Engineering and Bioengineering Departments. He works on theoretical mechanics, but also has an interest in the history of the mathematical sciences. He is a passionate proponent of discourse that crisscrosses disciplinary boundaries.

David Farrell is both Curator of the History of Science and Technology Program at Bancroft and University Archivist.

Peter Hanff, Deputy Director of the Bancroft Library, has an intimate knowledge of the archives at Bancroft and other Bay Area libraries, and a great commitment to the value of primary sources in undergraduate education.