



**FALL 2018**

**<http://fss.berkeley.edu/>**

**Freshman and Sophomore Seminars  
University of California, Berkeley  
231 Evans 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

## **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 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 unforgettable. For details on the Discovery Courses, see <http://lsdiscovery.berkeley.edu>.

This document was last updated on March 26, 2018.

## 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.

### **Asian American Studies 24, Section I**

#### **Asian American History in American Musicals (1 unit, P/NP)**

**Professor Catherine Ceniza Choy**

**Wednesday 11:00-12:00, 89 Dwinelle Hall, Class number: 25862**

This seminar will introduce students to Asian American history through the lens of American movie, theater, and television musicals including but not limited to South Pacific, Flower Drum Song, Miss Saigon, Allegiance, and Glee. Students will learn about the histories of Asian migrations to the United States, international and interracial romance and family formations, and Asian and Asian American representations in popular culture. **This seminar is part of the Food for Thought Seminar Series.**

Catherine Ceniza Choy is a professor of Asian American and Asian Diaspora Studies in the Department of Ethnic Studies. She is a core faculty member of the Center for Southeast Asia Studies and an affiliated faculty member of the Center for Race & Gender and the Berkeley Interdisciplinary Migration Initiative. Her major research interests focus on the U.S. global presence in Asian countries, Asian migrations to the United States, and the impact of trans-Pacific migration on American and Asian societies. She is the author of the award-winning book, *Empire of Care: Nursing and Migration in Filipino American History*, which explored how and why the Philippines became the leading exporter of professional nurses to the United States. Her second book, *Global Families: A History of Asian International Adoption in America*, unearths the little-known historical origins of Asian international adoption in the United States beginning with the post-World War II presence of the U.S. military in Asia.

Faculty web site: <http://ethnicstudies.berkeley.edu/people/faculty-profile/catherine-ceniza-choy>

### **Civil and Environmental Engineering 24, Section I**

#### **Waves: Ideal, Real, and In-Between (1 unit, P/NP)**

**Professor Evan Variano**

**Wednesday 12:00-1:00, 544 Davis Hall, Class number: 27764**

Predicting sinusoidal wave motion has been one of the great successes of calculus and is a centerpiece of basic physics. However, many of the wave types observed in nature do not fit into this rather narrow mathematical description. This course will take a broad view of waves, exploring a wide variety of different wave types. Examples will be drawn from fields including biology, ecology, and physics, with a particular emphasis on the water waves encountered in environmental engineering. For each wave type we explore, we will consider the simplified mathematical models that try to capture the essence of the wave. We will explore the limits of these models and discuss the practical implications of making engineering decisions based on idealized models. The class will follow Gavin Pretor-Pinney's armchair science book, "The Wave Watcher's Companion," with supplementary material presented in class to motivate and support group discussions. **This seminar is part of the Food for Thought Seminar Series.**

Dr. Variano studies fluid motion in the environment, with a special focus on the air-water interface. As an innovator of laboratory techniques, he has found ways to directly observe fluid behavior in new and revealing ways. He uses his measurements to describe the underlying physical processes that control the

motion of pollutants, nutrients, and plankton in the world's oceans. The constant tension between observing the world in all its complexity and simplifying it for engineering purposes is what drives his research program; this tension is a central theme that we discuss in the seminar. Undergraduates contribute in significant ways to his research efforts, with several students joining the lab each year. He has also published a paper on best practices for integrating research experiences and classroom learning.

**Classics 24, Section 1**

**Magic, Miracles, Sex, and Salvation in the Roman World (1 unit, P/NP)**

**Professor Robert Knapp**

**Wednesday 3:00-5:00, 308C Doe Library, Class number: 32201**

**Classes will be held for 7 weeks, from August 22 to October 3, 2018.**

We will examine in translation the great Latin novel of classical antiquity, Apuleius' *Metamorphoses* (The Golden Ass), in order to explore the social, intellectual, and religious world of the second century AD. The novel, most famous for the tale of Cupid and Psyche, presents a unique picture of life wrapped in an entertaining, amusing, and often enigmatic narrative of the adventures of a man magically changed into an ass.

Robert Knapp is an emeritus professor of Classics. His interests include Roman social history and the religions of the Greco-Roman world.

**Classics 24, Section 2**

**Lucretius' "On the Nature of the Universe" (1 unit, P/NP)**

**Professor Dylan Sailor**

**Monday 2:00-3:00, 210 Dwinelle Hall, Class number: 32204**

In this seminar, we will read together and discuss one brilliant and fascinating poem, Lucretius' "On the Nature of the Universe." Written in Latin more than two thousand years ago, within the context of the late Republic of ancient Rome, the poem seeks to remove your fear of the gods and of death so that you can live a happy life. For Lucretius, the key to losing your fear is to understand the physical laws of the universe. In this philosophical treatise, written in beautiful poetry, Lucretius describes a theory of the universe according to which nothing exists but atoms and void, argues that the soul is made of these and dissolves upon the death of the body, explains the operation of the senses, considers the origin of the world and the beginning of civilization, and surveys a wide range of natural phenomena (especially weather, seismic events, bodies of water, magnetism, and disease). This is a poem likely to be interesting to people interested in poetry and literature, in science, in philosophy, or in ancient Rome. Please note: we will read "On the Nature of the Universe" in English translation, and no knowledge of Latin is expected.

Dylan Sailor is from Washington state and received his PhD from Berkeley in 2002. His research focuses on Latin literature written in ancient Rome and he teaches a variety of courses in the languages, literatures, and cultures of ancient Greece and Rome.

**English 24, Section 1**

**Emily Dickinson (1 unit, P/NP)**

**Professor Bryan Wagner**

**Tuesday 3:30-4:30, 305 Wheeler, Class number: 32037**

We will be reading and discussing extraordinary poems by Emily Dickinson.

Bryan Wagner is Associate Professor in the English Department at the University of California, Berkeley. He received a PhD in English from the University of Virginia before coming to Berkeley in 2002. His

research focuses on African American expression in the context of slavery and its aftermath, and he has secondary interests in legal history, urban studies, and popular music. He has published *Disturbing the Peace: Black Culture and the Police Power after Slavery* (Harvard UP, 2009) and *The Tar Baby: A Global History* (Princeton UP, 2017). A book on *The Wild Tchoupitoulas*—a landmark album of processional call-and-response music arranged as electric funk—is forthcoming in the 33 1/3 Series from Bloomsbury. Other work includes a collaborative digital cartographic archive, *Louisiana Slave Conspiracies*, and a critical edition, *Bras-Coupé: The Fugitive Slave Who Fought the Law, Ruled the Swamp, Danced the Bamboula, Invented Jazz, and Died for Love*.

Faculty web site: <https://english.berkeley.edu/profiles/74>

## **English 24, Section 2**

**Community in U.S. History: Two Versions of the Classics, from Harvard, 1909 to Taylor Mac, 2018 (I unit, P/NP)**

**Professor Susan Schweik**

**Thursday 1:00-2:00, 210 Dwinelle , Class number: 32164**

In this course we'll think and read together about how communities in this country were and are built, how they were and are torn apart, and, in the words of Taylor Mac, how they were and are "built as the result of being torn apart." Our springboards will be two very different texts. We'll alternate between 1) critically reading through the first volume of the 1909 Harvard Classics (*The Autobiography of Benjamin Franklin*, *The Journal of John Woolman*, and *Fruits of Solitude* by William Penn) and 2) critically examining 2017 MacArthur Fellow Taylor Mac's *A 24-Decade History of Popular Music*, a recent 24-hour-long performance piece grounded in songs that were popular in the US from 1776 to the present day. The Harvard Classics were designed by Harvard University President Charles W. Eliot to provide all the elements of a liberal education that could be gotten from reading 15 minutes a day from books that could fit on a five-foot shelf. These were the kinds of books first-year students would have encountered at Harvard in 1909. In high drag queen style, in boots that might be as tall as that shelf, Taylor Mac offers a performance experience intended to provide another educational survey: "a deconstruction, reimagining, reframing, and reenactment of 240 years of US history." "When you leave the theater," one review of Taylor Mac's *24-Decade History* wrote, "you feel ready to rebuild a more just and thoughtful society from the ruins." Let's use these varied works to think together about how to do this. The pièce de résistance: we'll end our semester by going as a group to see Taylor Mac's latest installment in *A 24-Decade History of Popular Music*, "Taylor Mac's Holiday Sauce," at the Curran Theater in San Francisco. "Taylor Mac takes on the holidays in this project. Celebrating the holiday season in all of its dysfunction, Taylor Mac is joined by longtime collaborators designer Machine Dazzle, music director Matt Ray, a spectacular band and surprise special guests to reframe the songs you love and the holidays you hate." (Holiday-hating is not a prerequisite for this course. What IS necessary is that you are free the evening of Friday Nov. 30 at 8 pm--that's eight days AFTER Thanksgiving--to see the show, which will cost you nothing.)

Before signing up to enroll, please check out Taylor Mac here: <http://www.taylor-mac.org/about/and> the Harvard Classics here: <http://www.bartleby.com/hc/>

**Students must be able to attend an event on Friday, November 30th (no charge).**

Susan Schweik's last book was *The Ugly Laws: Disability in Public*. She is completing a book tentatively titled *Unfixed: How the Women of Glenwood Changed American IQ, Why We Don't Know It*. A recipient of Berkeley's Chancellor's Award for Advancing Institutional Excellence and U.C.'s Presidential Chair in Undergraduate Education, she has taught at Berkeley for 34 years. She is a recipient of Berkeley's Distinguished Teaching Award. Her proudest honor is the name sign given to her by students at Gallaudet: see [www.youtube.com/watch?v=r430KOg\\_nt8&feature=youtu.be&hd=1](http://www.youtube.com/watch?v=r430KOg_nt8&feature=youtu.be&hd=1).

Faculty web site: [http://english.berkeley.edu/contact/person\\_detail.php?person=68](http://english.berkeley.edu/contact/person_detail.php?person=68)

**English 24, Section 3**  
**Films of Alfred Hitchcock (1 unit, P/NP)**  
**Professor Mark Goble**  
**Wednesday 2:00-3:00, 189 Dwinelle Hall, Class number: 32212**

We will watch and discuss films that span the length of Alfred Hitchcock's cinematic career, with a special focus on "Vertigo," "Rear Window," "Psycho" and other masterpieces from the decades after World War Two. In addition to discussing Hitchcock's style and place in film history, we will also explore how his work reflects on the period's politics and popular genres.

Mark Goble is Associate Professor in the English department, and specializes in twentieth- and twenty-first-century American literature, as well as film and media studies.

Faculty web site: <http://english.berkeley.edu/profiles/156>

**Environmental Science, Policy, and Management 24, Section 1**  
**Issues in Natural Resource Conservation (1 unit, P/NP)**  
**Professor David Wood**  
**Friday 10:00-11:00, Genetics & Plant Bio 104, Class number: 26350**

**There is one optional field trip to Muir Woods on a Saturday or Sunday 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; fracking; global warming and geoengineering; 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. In 1995 he was awarded the Berkeley Citation for distinguished service to the University.

Among his numerous publications, he recently co-authored three research papers, one that is published in *Forest Ecology and Management*, one in *Forest Science* and one in *Environmental Entomology*.

Faculty web site: [http://ourenvironment.berkeley.edu/people\\_profiles/david-wood/](http://ourenvironment.berkeley.edu/people_profiles/david-wood/)

**Environmental Science, Policy, and Management 24, Section 3**  
**Soil Pollution and Remediation (1 unit, P/NP)**  
**Professor Céline Pallud**  
**Tuesday 3:00-4:00, 189 Dwinelle Hall, Class number: 26352**

This seminar will explore environmental quality from the aspect of soil science. Soil degradation is the decline in soil quality due to agricultural, industrial or urban activities. Soil degradation is a global problem that encompasses physical, chemical and biological deterioration. Soils play crucial roles in the quality of our environment, affecting, for example, food and water quality and quantity, and supporting many living organisms. This seminar will focus on soil pollution, and on remediation, which is the removal of pollutants and contaminants. An understanding of soil properties and processes is essential to understand how pollutants behave in soil, and how to design (bio)remediation strategies. The seminar will introduce students to basic soil properties and will include current topics, relevant problems and discussion of emerging approaches to soil remediation, with a focus on bioremediation and phytoremediation (using soil microorganisms or plants to clean up soils).

C. Pallud has been teaching soil science and doing research on soil and environmental quality at UC Berkeley for the last five years. Her research and background are strongly multidisciplinary, at the interface between soil physics, soil chemistry and soil microbial ecology. Her research is focused on understanding how those nutrients and contaminants cycle in the environment, with implications for maintenance of water and soil quality, evaluation of pollution risks, and design of (bio)remediation strategies.

Faculty web site: <http://celinepallud.com/>

**Environmental Science, Policy, and Management 24, Section 4  
Conservation and Environmental Problem Solving: California and Beyond (1 unit, P/NP)**

**Professor Gordon Frankie**

**Wednesday 11:00-12:00, 78 Barrows Hall, Class number: 26353**

We will look at current conservation and environmental problems facing California and other states. We will examine each problem and its historical and ecological roots and then discuss the kinds of solutions available for addressing the problems. Students will be asked to suggest the problems, and then they will offer to report on them through PowerPoint or other media of presentation. One or two DVDs will be used to show details of some classic solutions, for example the "Saving the Bay" story, focusing on the three women credited with starting the movement that changed the way we now protect coastlines in California, the United States, and around the world.

All case history information will be discussed critically and constructively. The instructor will offer historical context to many of the discussions. This contribution is based on requests received in past seminars from students. **All students from all disciplines are welcome.**

Professor of ESPM with research interests in native bee ecology and plant reproductive biology in urban, wild, and agricultural environments in CA and Costa Rica. Also interested in the relationships between native bees, plants, and people. This three-part relationship has led to several projects in science-based outreach to the general public.

Faculty web site: <http://helpabee.org>

**Environmental Science, Policy, and Management 24, Section 5  
Discussions on Evolutionary Biology (1 unit, P/NP)**

**Professor Philip Spieth**

**Tuesday 2:00-3:00, 214 Haviland Hall, Class number: 26354**

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. For eleven years he served as director of operations for the National Center for Science Education, a nonprofit organization devoted to the teaching of evolutionary biology and climate change science in public schools.

Faculty web site: [http://ourenvironment.berkeley.edu/people\\_profiles/philip-spieth/](http://ourenvironment.berkeley.edu/people_profiles/philip-spieth/)

**Environmental Science, Policy, and Management 24, Section 6  
Foresters, Forests and Forestry (1 unit, P/NP)**

**Professor Kevin O'Hara**

**Wednesday 3:00-4:00, 2066 Valley Life Sciences Building, Class number: 26355**

What is forestry and what does a forester do? These are the central questions to be explored in this seminar. Forests cover much of the terrestrial surface of our planet and provide the habitat for much of the world's wildlife diversity. It is important that forests be sustained to provide these values in the future. Foresters play a key role in sustaining forests by understanding how forest ecosystems function and how they can be managed to sustain the many ecosystem services they provide. We will take a historical look at the role of foresters and discuss how a forester isn't someone who gives tours in a national park or lives in a lookout tower. The modern forester understands how forests change over time and the potential effects of climate change and increasing human populations on forests and forestry. This seminar will include a mixture of readings, videos, and discussions to explore what forestry is. **Intended for first-year students in the Forestry and Natural Resources major and students considering this major. This seminar is part of the Food for Thought Seminar Series.**

Dr. Kevin L. O'Hara is a professor in the Department of Environmental Science, Policy, and Management. He joined the Berkeley faculty in 1998. He is licensed forester in California and teaches courses in forestry on the Berkeley campus and in the popular Forestry Field Camp program during the summer.

Faculty web site: [http://http://ourenvironment.berkeley.edu/people\\_profiles/kevin-ohara/](http://http://ourenvironment.berkeley.edu/people_profiles/kevin-ohara/)

**German 24, Section I**

**Germany Now (1 unit, P/NP)**

**Professor Karen Feldman**

**Tuesday 1:00-2:00, 7 Evans Hall, Class number: 32182**

This freshman seminar will introduce students to the country of Germany--its political system, social issues, and significant cultural elements. We will first quickly review German history since 1918, and then discuss political parties, the election system, Angela Merkel, Turkish-German and migration issues, arts and literature, and more. No knowledge of the German language is required for this course.

Karen Feldman is Associate Professor of German. She works on aesthetics, critical theory and literary theory.

Faculty web site: <http://german.berkeley.edu/people/professors/karen-feldman/>



## **Global Studies 24, Section I**

### **Diversity, Identity, and Social Justice: America in Global Perspective (I unit, P/NP)**

**Lecturer Darren Zook**

**Tuesday 2:00-3:00, 5 Evans Hall, Class number: 24996**

Diversity is perhaps the most important social issue in America. As a concept, diversity includes and relates to a number of other issues, such as racism, discrimination, social justice, immigration, marginality, integration, and so forth. Many a program has been put in place to address and resolve these issues, in the hope that over time, America would come together and make all of its differences work collectively as one harmonious and integrated society. For some people, this is already happening. For others, America seems more divided now than ever, and diversity has failed to deliver on its promise.

This seminar will delve into the complexities of this thing we call diversity, to explore the rhetoric and the reality of diversity as it currently exists in America. We will do this by reading accounts of diversity as it happens—not just in the news but also in a variety of different media—and then learning how to discuss critically the central issues of diversity. The goal is not just to talk about diversity, but also to learn how to talk about diversity in ways that are both critical and constructive. Diversity is an extraordinarily sensitive issue, and too many people simply avoid the conversation to avoid the discomfort that might ensue.

Darren Zook has been a member of the faculty at the University of California, Berkeley, since 2000. He teaches in International and Area Studies and in Political Science. He has taught previously at the University of California, Davis, and at the Claremont Colleges in southern California. In 2012, he was a Fulbright Research Scholar in Singapore working on a project that focused on cybersecurity in the Asia-Pacific region.

During his time at the University of California, Berkeley, Darren Zook has taught and published on a wide variety of topics, including the politics of the Asia-Pacific region, human rights and international law, terrorism and security studies, multiculturalism and diversity, and economic policy with a focus on anti-corruption programs. His research interests have continuously grown into an unusually broad portfolio of international and comparative projects, and his work has taken him to various parts of Asia, the Pacific Islands, and northern Europe.

Zook has recently published a four-book series, entitled *Ourselves Among Others: The Extravagant Failure of Diversity in America* and *An Epic Plan to Make It Work*, which is an engaged critique of current diversity policy and practice in the United States and elsewhere in the world.

## **History of Art 24, Section I**

### **Feminism and Other Life Skills (I unit, LG)**

**Professor Lauren Kroiz**

**Friday 1:00-2:00, 425 Doe Library, Class number: 32183**

What does it mean to be a feminist now? What is feminism's lineage? What does feminism look like? How can feminism teach us now? This course is designed to give students an introduction to key texts in feminist theory with an emphasis on their deployment in the visual arts. In addition to reading and discussing these texts, students will be required to undertake feminist experiments in their daily lives. Assessment will be based on journal exercises. Although the class is not limited to those identifying as women, major emphasis will be placed on implementing feminist strategies while identifying as female. **Although this class is not limited to those identifying as women, major emphasis will be placed on implementing feminist strategies while identifying as female.**

Lauren Kroiz's research focuses on modern art in, and in exchange with, the United States. Lauren authored *Creative Composites: Modernism, Race, and the Stieglitz Circle* (2012, Phillips Book Prize Winner) and *Cultivating Citizens: The Regional Work of Art in the New Deal Era* (2018). She is working on being a feminist.

Faculty web site: <http://arthistory.berkeley.edu/person/1799032-lauren-kroiz>

### **Integrative Biology 24, Section 1**

#### **Biological Impacts of Climate Change (1 unit, P/NP)**

**Professor Caroline Williams**

**Tuesday 2:00-3:00, 5192 Valley Life Sciences Building, Class number: 21839**

The pace of current climate change is orders of magnitude faster than any changes experienced in the Earth's past. This is reconfiguring biological diversity in ways that we are only beginning to recognize. Organisms are shifting their distributions in time and space, and experiencing population fluctuations and extinctions. In this seminar we will explore the biological impacts of climate change on plants, animals (including humans), communities, and ecosystems. **Any students interested in learning more about biological responses to climate change**

**This seminar is for anyone who cares about the planet, wants to understand climate change research, and become a more effective advocate for understanding climate change. You must be prepared to fully engage with the course, contribute actively to discussions, and do all the readings.**

Caroline Williams is an Assistant Professor in Integrative Biology. She is an evolutionary physiologist who studies the evolution of metabolism in response to environment perturbations. One of her research foci is the responses of insects to winter climate change.

Faculty web site: <http://cmwilliamslab.com>

### **Integrative Biology 24, Section 2**

#### **Biology in Light of the Microbiome (1 unit, P/NP)**

**Professor Britt Koskella**

**Tuesday 4:00-5:00, 5192 Valley Life Sciences Building, Class number: 25618**

We are at an exciting moment in the Biological Sciences. Every field, from Ecology and Evolution to Molecular Biology to Medicine, is being reexamined in light of new evidence that the microbiome (the vast array of microbes inhabiting humans and other species) influences how the host develops, what the host eats and metabolizes, how the host acts, and the host's general health. In short, every aspect of biology is fair game for reconsideration through the lens of the microbiome; and this is especially true of the human microbiome given its direct relevance to medicine and human health.

In this course will examine the new, most exciting data on how the microbiome shapes its host phenotype. We will take a broad view of this idea, covering many systems (including humans, other vertebrates, invertebrates, and plants) and many different microbiome-mediated traits (including disease, behavior, growth, and species interactions). By reading both popular science articles and the primary literature, we will work together to identify the big questions that still need to be addressed and discuss how a research team could test these questions. Who knows, perhaps we will come up with the next great microbiome experiment!

Britt Koskella is an assistant professor in Integrative Biology, whose work focuses on interactions between bacteria and the viruses that infect them (bacteriophages). She seeks to understand how coevolution between bacteria and phage might influence the health of eukaryotic hosts, such as agriculturally important plant species. She is passionate about her research and strongly believes that a good understanding of evolution and ecology is critical to progress in the medical sciences. Koskella also strongly believes that scientific progress can only be made by embracing diverse viewpoints, backgrounds, and training.

Faculty web site: <http://brittkoskella.wordpress.com/>

**Integrative Biology 24, Section 3**  
**Ethnobiology, Nutrition, and Global Food Systems (1 unit, P/NP)**  
**Professor Thomas Carlson**  
**Tuesday 10:00-11:00, 5192 Valley Life Sciences Building, Class number: 21840**

We will explore the ethnobiological systems around the world that generate thousands of different species of plants and animals eaten by humans. We will examine the historical, cultural, commercial, and biological factors that have resulted in the worldwide consumption of certain plant and animal species. We will also compare the nutritional qualities, health effects, and carbon footprint of conventional industrial food, organic food, locally grown food, and food that is hunted or gathered. In this seminar we will read Michael Pollan's *Omnivore's Dilemma* and view the documentary film *Food Inc.* **Any interested Freshmen are welcome.**

Thomas Carlson is a physician and ethnobotanist who is on the faculty of the Department of Integrative Biology and is Curator of Ethnobotany in the University and Jepson Herbarium at the University of California, Berkeley. He has conducted food plant and medicinal plant research with, and provided medical care for, over forty different ethno-linguistic groups in fifteen different countries in South America, Central America, North America, Africa, Asia, and Pacific Islands. Tom's multidisciplinary work with diverse institutions, biocultural environments, and communities has helped illuminate how local indigenous ethnobotanical systems contribute to human health and ecosystem health.

Faculty web site: <http://ib.berkeley.edu/people/faculty/carlsont>

**Integrative Biology 24, Section 4**  
**Night (and Day) in the Museum: What Really Goes on in Berkeley's Museum of Vertebrate Zoology? (1 unit, P/NP)**  
**Professor Eileen Lacey**  
**Wednesday 4:00-6:00, 5192 Valley Life Sciences Building, Class number: 21841**

**Weeks 1-7 of semester, 2 hours per week, plus 1 Saturday field trip on first Saturday of semester**

Ever wonder what museum curators really do? Through a combination of tours, hands-on exercises, and student projects, we will explore the diverse activities encompassed by modern natural history museums. This is a rare chance to go behind the scenes at one of the top vertebrate natural history collections in North America . . . and learn how you could become involved in museums-based studies of vertebrate evolution and conservation. We are hoping to attract freshmen interested in potential long-term involvement in the Museum of Vertebrate Zoology community as students, interns, and research assistants. This includes (but is not limited to) students interested in museum science, vertebrate biology, field research, ecology and evolution.

**The course is open to all freshmen, but we are particularly eager to recruit prospective biology majors who are likely to develop long-term affiliations with the Museum of Vertebrate Zoology and its Undergraduate Apprentice Program.**

Eileen Lacey is a behavioral ecologist who studies the ecological and evolutionary bases for sociality in vertebrates, with an emphasis on mammals. Currently, Dr. Lacey's work focuses on the reasons for group living and cooperation in several species of South American rodents. Her analyses combine field studies of the behavior and ecology of these animals with molecular genetic analyses of patterns of parentage and kinship within social groups. At Berkeley, Dr. Lacey teaches courses in animal behavior and behavioral

ecology.

Faculty web site: <http://ib.berkeley.edu/labs/lacey/>

### **Integrative Biology 24, Section 5**

#### **How and Why Do Birds Sing (1 unit, P/NP)**

**Professor George Bentley**

**Wednesday 2:00-3:00, 5192 Valley Life Sciences Building, Class number: 21842**

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 Associate 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.

Faculty web site: <http://ib.berkeley.edu/people/faculty/bentleyg>

### **Integrative Biology 24, Section 6**

#### **The Age of Dinosaurs: What Do We Know? (1 unit, LG)**

**Professor Kevin Padian**

**Wednesday 12:00-1:00, 1101 Valley Life Sciences Building, Class number: 32198**

Dinosaurs were big funny animals, and "Jurassic Park" was cool. But what's behind all this? In this seminar we use dinosaurs to explore how we know what we know about extinct life, and the methods and approaches that scientists use to study evolution in general. We also explore common myths, such as the idea that dinosaurs were slow and slow-witted, and that an asteroid drove them to extinction. Berkeley's Museum of Paleontology is the largest collection of fossils in any university in the world, and we use it on a weekly basis in this course. A notebook, some writing, and strong initiative in participation are required. **Students don't need any preparation for this course except an interest in the subject and the desire to understand how science is constructed. This course is designed to be taken for a letter grade. Students who elect to take this seminar should enroll under the letter grade option.**

**Students interested in the class should add themselves to the waitlist and send the instructor a paragraph explaining their interest in the class by August 1, 2018 (to**

**kpadian@berkeley.edu). Enrollment is limited to 8 students and applications will be accepted on a rolling basis.**

Kevin Padian has been teaching at Berkeley for thirty-six years, mostly courses in evolution, paleontology, and the history of these fields. Research in his lab centers on how large-scale changes get started in evolution, particularly the major new adaptations in vertebrates such as flight, the emergence of dinosaurs, and the evolution of unusual structures and behaviors. He also spends a lot of time on the creation-evolution issue, educating the public about what science is and isn't.

Faculty web site: <http://ib.berkeley.edu/people/directory/detail/5468/>

### **Journalism 24, Section I**

#### **Looking Backward: Storytellers Using the Future to Change the Present (1 unit, LG)**

**Professor Thomas Leonard**

**Monday 1:30-2:30, 127 North Gate Hall, Class number: 28772**

Beginning with Margaret Atwood's *The Handmaid's Tale* as both a novel and a TV series, this seminar will look at how social critics and audiences see an alternative to the status quo in stories of the future. Storytelling of this type has a long history and much can be learned by gaining this perspective:

In 1887, Edward Bellamy wrote *Looking Backward: 2000-1887*. Bellamy inspired clubs to form across the nation to advance a form of socialism that the novel placed in the 21st century. Bellamy, a journalist, was particularly successful in California.

*Fahrenheit 451* by Ray Bradbury was science fiction for readers in the 1950s that foresaw an America where state censorship would come close to wiping out cultural memory. Bradbury wrote the warning on a UC campus. *Fahrenheit 451* (HBO film, May 2018) brings us up to date. The character played by Michael B. Jordan says: "news, facts, memoirs, the Internet of old . . . burn it!" **This seminar is part of the On the Same Page initiative.**

Prof. Leonard is retired from the Graduate School of Journalism and from the campus post of University Librarian. He is the author of three books on political reporting and the growth of American democracy. He is also a past leader of the Media Studies program at Cal. He is particularly interested in the ways that new media are shaping public policy and elections.

### **Linguistics 24, Section I**

#### **Language Myths (1 unit, P/NP)**

**Professor Larry Hyman**

**Monday 10:00-11:00, 106 Dwinelle Hall, Class number: 30595**

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 lesser known languages that 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.

Faculty web site: [http://linguistics.berkeley.edu/people/person\\_detail.php?person=19](http://linguistics.berkeley.edu/people/person_detail.php?person=19)

**Linguistics 24, Section 2**

**African American English (1 unit, P/NP)**

**Professor Peter Jenks**

**Wednesday 1:00-2:00, 89 Dwinelle Hall, Class number: 24518**

This freshman seminar surveys major topics in the linguistic study of African American English (AAE), a major dialect of American English which is widely spoken across the United States. We will examine AAE from the perspective of linguistics, the scientific study of language, comparing its sound system and grammar to other American English dialects. In addition, we will examine common myths and misunderstandings about AAE, controversies about AAE in the classroom, and performative aspects of AAE, including its cultural and social significance.

Professor Peter Jenks is a theoretical linguist, with a focus on understudied languages from Southeast Asia and Africa. He grew up in Southeast Asia where he became curious about the differences and similarities between languages, which is the topic of his research. Professor Jenks then attended high school in Chattanooga, TN, where he became and remains fascinated by grammatical differences among American English dialects.

**Mathematics 24, Section 1**

**Using Random Walks in the Physical and Social Sciences (1 unit, P/NP)**

**Professor F. Alberto Grunbaum**

**Thursday 10:00-12:00, 939 Evans Hall, Class number: 22083**

**Class will meet for 2 hours on Thursdays for the first seven weeks of the semester.**

Random walks (whatever they are) have been used as models to understand all sorts of phenomena. More recently this has been enriched with the introduction of so-called "quantum walks." I will explain what this is all about and illustrate some of the surprising results one can explain with these tools by looking at the so called Parrondo's paradox (you may want to Google this one).

Alberto Grunbaum is a Professor in the Mathematics Department at UC Berkeley. His fields of expertise include analysis, probability, integrable systems and medical imaging.

Faculty web site: <http://math.berkeley.edu/people/faculty/f-alberto-gruenbaum>

**Mechanical Engineering 24, Section 1**

**Art and Science on Wheels (1 unit, P/NP)**

**Professor Benson Tongue**

**Friday 10:00-11:00, 35 Evans Hall, Class number: 32089**

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. **Upright bipeds with bilateral symmetry preferred. Hopefully mammalian.**

Benson likes to profess in the Department of Mechanical Engineering. His interests lie in the fields of vibrations, dynamics and controls, not to mention Scottish dancing, bicycling, fast cars, bird watching, photography and playing around with Photoshop. His books, Principles of Vibrations and Dynamics: Analysis and Design of Systems in Motion, make great bedtime reading.

Faculty web site: <http://www.me.berkeley.edu/faculty/tongue/>

### **Media Studies 24, Section 1**

#### **The U.S. Supreme Court: A Critical Appraisal (1 unit, P/NP)**

**Lecturer William Turner**

**Monday 11:00-12:00, 279 Dwinelle Hall, Class number: 25754**

The seminar will examine the role of the Court in our system, its influence on American life, and some of its most consequential decisions. The decisions, which the students will read in the original, include *Brown v. Board of Education*, the “Pentagon Papers” decision, *Marbury v. Madison*, *New York Times v. Sullivan*, *Roe v. Wade*, and *Citizens United*. After an introduction to the Court, its personnel and practices, we will critically examine the Court’s reasoning in the cases and their historical significance. **No instructor approval required. I’d hope for the most diverse group possible, open to all regardless of intended major or specific academic interest.**

For the last thirty-two years William Bennett Turner has taught courses on the First Amendment at UCB. He continues to teach Freedom of Speech and the Press, Media Studies 104A, every spring. He graduated from the Harvard Law School and then practiced law for forty-five years. He argued three cases before the United States Supreme Court and many more in the lower courts. He is the author of *Free Speech: Supreme Court Opinions from the Beginning to the Roberts Court* (Cognella 2017), and *Figures of Speech: First Amendment Heroes and Villains* (Berrett-Koehler 2011). Turner has published dozens of articles in various magazines, newspapers, law reviews, and online sites, including the *New York Times*, *Politico*, *Wired*, the *San Francisco Chronicle*, and *Harvard Magazine*. He served as Legal Affairs Correspondent for KQED television.

Faculty web site: <http://www.williamturner.com>

### **Media Studies 24, Section 2**

#### **Watts to Wakanda: "Blaxploitation" Cinema 1971 - 1989: the forerunner of "Black Panther" (1 unit, P/NP)**

**Professor William J. Drummond**

**Monday 1:00-2:00, 180 Barrows Hall, Class number: 32334**

The 1970s ushered in the “blaxploitation” movie genre. These motion pictures were memorable because of the funk and soul sound tracks, and they gave employment to talented black actors. But their content was often violent and upsetting. *Variety* credits Sweetsweetback’s *Badasssss Song* and *Shaft*, both released in 1971, as the pioneers in this brand of cinema, which was pitched primarily to African American audiences. The movies were popular in black communities, but were criticized as playing up racial stereotypes and lending credence to a theme of black pathology. The class will explore the genre in viewings, readings, discussions and critiques.

**Students interested in African American history as well as cinema. This seminar is part of the Food for Thought Seminar Series.**

William J. Drummond joined the faculty in 1983 after a career in public radio and newspapers. He has worked as an adviser to the San Quentin News since 2011. In 2014 San Quentin News was awarded the James Madison Freedom of Information Award from the Society for Professional Journalists for its work in raising the public's awareness about mass incarceration. From 1979 to 1983 Prof. Drummond 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.

Faculty web site: <http://journalism.berkeley.edu/faculty/drummond/>

**Molecular and Cell Biology 90A, Section 1  
Museums of the Bay Area (1 unit, P/NP)  
Professor G. Steven Martin  
Thursday 4:00-5:00, 204 Dwinelle Hall, Class number: 22333**

**Class meetings 4:00--5:00 p.m. in 204 Dwinelle Hall on the following dates: 8/23, 8/30, 9/13, 9/27, 10/11, 10/25, 11/8, 11/29 and 12/6. Museum visits on the following Saturdays: 9/8, 9/22, 10/6, 10/20, 11/3, and 11/17.**

A museum, it has been said, is the memory of mankind: museums are places where one can appreciate the highest achievements of our own and other cultures. The goals of this seminar are to introduce you to the rich museum resources of the Bay Area and to develop your presentation and discussion skills by talking about what can be learned from them. We will visit six museums selected from the following list: in the East Bay, the Berkeley Art Museum, the Hearst Museum of Anthropology and the Oakland Museum of California; and, in San Francisco, the de Young Museum, the Legion of Honor, the San Francisco Museum of Modern Art, the Asian Art Museum, and the California Academy of Sciences. Topics for discussion will be based on what can be learned from their collections, and could range from the spread of Buddhism in Asia to LGBTQ activism in the Bay Area. **We will alternate on-campus discussions with six museum visits over the course of the semester. Museum visits will take place on Saturdays, and students who enroll in this seminar will need to commit to participating in these visits. Students will be expected to make a short presentation on one of the visits and help lead the ensuing discussion. Although this seminar is sponsored by the Department of Molecular and Cell Biology, the discussion topics will be unrelated to molecular or cell biology, and students from all disciplines are welcome. All of the costs of museum visits will be covered.**

I am a Professor Emeritus of Cell and Developmental Biology, and formerly served as Dean of Biological Sciences for the College of Letters and Science. For many years I carried out research on the molecular biology of cancer. But I have always been an avid museum-goer, and view my recent retirement as an opportunity to share my enthusiasm. Feel free to contact me ([gsm@berkeley.edu](mailto:gsm@berkeley.edu)) for more information.

Faculty web site: Faculty web-site: <http://mcb.berkeley.edu/faculty/CDB/martins.html>

**Molecular and Cell Biology 90A, Section 2  
Evolution: Creatures, Not Creation (1 unit, LG)**



**Professor Jeremy Thorner**  
**Friday 12:00-1:00, 174 Koshland Hall, Class number: 25761**

The advent of molecular biology, recombinant DNA methodology, and the capacity to obtain and computationally analyze 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 derived from field observations of existing 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 may range from Charles Darwin to Steven Jay Gould to James D. Watson. **This course is designed to be taken for a letter grade. Students who elect to take this seminar should enroll under the letter grade option.**

Jeremy Thorner is a Professor in the Division of Biochemistry, Biophysics and Structural Biology in the Department of Molecular and Cell Biology. He has been a faculty member at UC Berkeley since July 1974. 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, gene expression, growth, and proliferation rate, and cell shape that allow a cell to cope properly with the changed circumstances.

Faculty web site: [http://mcb.berkeley.edu/index.php?option=com\\_mcbfaculty&name=thornerj](http://mcb.berkeley.edu/index.php?option=com_mcbfaculty&name=thornerj)

**Molecular and Cell Biology 90C, Section I**  
**Biology in the News (1 unit, P/NP)**  
**Professor Gian Garriga**  
**Monday 11:00-12:00, 174 Koshland Hall, Class number: 24479**

We will discuss topics in biology that are in the news.

Gian Garriga is a professor in the Department Molecular and Cell Biology and a member of the Helen Wills Neuroscience Institute. He studies nervous system development using the nematode *Caenorhabditis elegans* as a model organism.

**Molecular and Cell Biology 90D, Section I**  
**Human Viruses and Disease (1 unit, P/NP)**  
**Professor P. Robert Beatty**  
**Thursday 11:00-12:00, 263 Dwinelle Hall, Class number: 24358**

This seminar will focus on human diseases caused by viruses. We will focus on a specific virus each week including influenza, measles, Ebola, Zika, chikungunya, hepatitis C, and herpes simplex virus. The course will begin with lectures by the instructors to introduce virology and immunology. The remainder of the course will be group work and student-led discussions of specific topics for each virus. **This seminar is part of the Food for Thought Seminar Series.**

Professor Beatty is an infectious disease immunologist who has worked on Chlamydia, Epstein-Barr virus, Leishmania, and dengue virus over the last 25 years. His research is focused on dengue virus immunology especially testing drugs and vaccines to protect against severe disease. He teaches immunology classes at Cal in the Department of Molecular and Cell Biology.

**Molecular and Cell Biology 90D, Section 2**  
**Revolutions in Biology: Past, Present, and Future (1 unit, P/NP)**

**Professor Russell Vance**

**Thursday 3:00-4:00, 447 Life Sciences Addition, Class number: 24478**

In this seminar, we will discuss revolutions in biology, with a particular focus on two emerging revolutions that have origins at UC Berkeley: the cancer immunotherapy revolution and the genetic engineering revolution. We will begin with a discussion of Thomas Kuhn's classic text, *The Structure of Scientific Revolutions*, and ask: what is a scientific revolution? and, how do they occur? We will then examine specific examples of revolutions in biology from the past and present, and discuss what biological revolutions might be on the horizon. Full disclosure: there is a fair amount of reading required for the class, especially in the first few weeks. Be prepared to read and discuss as much as a (short) book a week for this seminar. Students will be asked to write a short "reaction" paragraph each week in response to the readings, and active class participation is expected. Although this seminar will discuss some science, no particular scientific knowledge is required, and the level of scientific discussion will be accessible to all. Much of the seminar will be dedicated not to science itself, but to the social and philosophical underpinnings of science. Participation from students with a wide range of interests is encouraged.

**Although this seminar will discuss some science, no particular scientific knowledge is required, and the level of scientific discussion will be accessible to all. Much of the seminar will be dedicated not to science itself, but to the social and philosophical underpinnings of science. Participation from students with a wide range of interests is encouraged.**

Russell Vance has been a professor in the Department of Molecular and Cell Biology since 2006. He holds an MA in Philosophy from Queen's University (Canada), and a PhD in Immunology from UC Berkeley. He runs a research lab studying how our immune system defends against bacterial infections. In the Fall, he also teaches MCB 55 ("Plagues and Pandemics"); and in the Spring, he will teach MCB 103 ("Microbial Pathogenesis"). This is his third time teaching this freshman seminar.

Faculty web site: <https://mcb.berkeley.edu/faculty/IMM/vancer.html>

**Molecular and Cell Biology 90E, Section I  
Matter, Mind, Consciousness (1 unit, P/NP)**

**Professor David E. Presti**

**Thursday 2:00-3:00, 210 Dwinelle Hall, Class number: 25913**

All we know comes to us via our mental experience: our thoughts, feelings, perceptions, and conscious awareness. However, it is a deep mystery as to how the physical processes of our brain and are related to the subjective experience of consciousness. Some argue that the investigation of this mind-body connection is the most profound question in all of science, impacting everything about who we believe we are and how we relate to the rest of what we call reality. We will address this question from the perspectives of psychology, biology, physics, and philosophy -- cognitive science, broadly defined.

**Students interested in all areas of the arts, humanities, and sciences are encouraged to enroll.**

David Presti has taught neuroscience at UC Berkeley for twenty-seven years. For the past fifteen years, he has also been teaching neuroscience to Tibetan monastics in India and Bhutan.

Faculty web site: <http://mcb.berkeley.edu/labs2/presti/>

**Nuclear Engineering 24, Section I  
How It's Made (1 unit, P/NP)**

**Professor Peter Hosemann**

**Monday 11:00-12:00, 3119 Etcheverry Hall, Class number: 27588**

This class is an introduction to the conventional manufacturing techniques of components used in nuclear and other engineering applications. An introduction to metal fabrication will be given, including, but not limited to, a brief introduction to refining, casting, forming, machining and joining. After an overview of the techniques available to engineers, the students will be expected to perform a literature review and discuss how specifically chosen components can be manufactured. In addition, the students will be encouraged to participate in the campus-offered machine-shop training where basic skills in machining are taught after a short introduction by the professor to the shop tools.

Originally from Vienna Austria, Peter Hosemann earned his MS in 2005 and his PhD in 2008 at the Montanuniversitaet Leoben in Austria in Materials Science. Professor Hosemann is interested in experimental materials science for nuclear applications. His main focus is on structural materials used for nuclear components (fission, fusion, spallation, etc.). His research focuses on developing a basic understanding of the materials' degradation processes in a nuclear environment and resulting consequences to engineering application.

**Nuclear Engineering 24, Section 2**  
**Professional Orientation for Freshman Engineers (1 unit, P/NP)**  
**Professor Karl van Bibber**  
**Monday 9:00- 10:00, 3119 Etcheverry Hall, Class number: 32252**

What does it mean to be a professional? Why should you think of yourself and act as a professional engineer already from the beginning of your freshman year? This seminar will deal with topics that are extraordinarily important for you to be familiar with, but are almost never presented in today's fast-paced specialized undergraduate curriculum: professional respect and demeanor, time management and organization of your work, professional ethics and research integrity, intellectual property, effective technical speaking and writing, federal legislative and budget processes, lifelong learning, professional societies, project management, etc. This will prepare you to be not only a highly productive professional later on, but a much more successful student right now. **This seminar is intended to be useful for all freshmen, primarily but not exclusively engineers.**  
**This seminar is part of the Food for Thought Seminar Series.**

Karl van Bibber received his BS and PhD from MIT in experimental nuclear physics. After postdoctoral work at LBNL, he served as an Assistant Professor of Physics at Stanford. He joined LLNL where he founded and led the High Energy Physics and Accelerator Technology Group, and was LLNL Project Leader for construction of the SLAC-LBNL-LLNL PEP-II B Factory project. His institutional service includes positions as Chief Scientist for the Physics and Space Technology directorate, and Deputy Director of the Laboratory Science and Technology Office. In 2009 he became Vice President and Dean of Research of the Naval Postgraduate School in Monterey, CA. In 2012 he joined the faculty of UC Berkeley as Professor of Nuclear Engineering, and acceded to Department Chair in July 2012. He also serves as Executive Director of the Nuclear Science and Security Consortium, a DOE Office of Non-Proliferation center-of-excellence comprising eight universities and five national laboratories. His research focuses on basic and applied nuclear science, particle astrophysics, and accelerator science and technology. He is the recipient of an Alfred P. Sloan Research Fellowship, the DOE Deputy Secretary Award for the B Factory, and the Navy Superior Civilian Service Award for the establishment of degree and executive education programs in Energy, the first within the DoD. He is a fellow of the APS and AAAS.

Faculty web site: <http://www.nuc.berkeley.edu/karl-van-bibber>

**Nutritional Sciences and Toxicology 24, Section I**  
**Nutrition and Wellness (1 unit, P/NP)**  
**Professor Gregory Aponte**  
**Thursday 11:00- 12:00, 185 Barrows Hall, Class number: 26777**

This seminar will provide basic tools to help guide one through making dietary decisions to achieve and/or maintain a healthy body and mind. The first part of the seminar discussions will explore the basic elements that make up a healthy diet in light of the body's metabolic and physiological needs. The second part will examine the interplay between nutrition and behavior, such as food intake regulation, eating disorders, responses to alcohol, and responses to stress. The focus of topics will vary depending on class interest.

### **All freshmen**

Our laboratory has been characterizing how dietary nutrients (before they are metabolized) can be signals that cause changes in gene regulation and/or the release of bioactive molecules from peripheral tissues and nerves. We discovered specific receptors on sensory neurons that are stimulated by nutrients, hormones, and unique molecules present in lymphatic fluid. We are investigating if these neurons are part of a system whereby dietary molecules (and also molecules from peripheral tissues) can activate local neurons that stimulate spinal nerves or the brain. This system provides a new pathway for the regulation of central nervous system activity, metabolism, and behavior in response to biologically active molecules and nutrients, and expands our concept of the gut-brain axis.

### **Nutritional Sciences and Toxicology 24, Section I Mentorship in Movies and at Cal (1 unit, P/NP)**

**Professor George Chang**

**Wednesday 10:00-12:00, Media Resources Center - Classroom B, Class number:  
26797**

Mentorship from professors is a very important reason for attending a top-tier university like UC Berkeley. Cal is one of the world's greatest universities, but it can be hard for Cal students to find a faculty mentor. This is a problem.

In this seminar we will approach the mentorship problem by studying some of the great mentors in the movies. We will examine mentorship in its very earliest, least obvious stages; discuss how students can find further mentorship; and finally see how multiple and repeated small bits of mentorship can add up to a great mentorship experience.

In the course of the semester, we will screen films such as "The Drunken Master" and "Back to the Future." After each movie, a team of students will lead a discussion about the film. Some students may choose to focus on the movie plots or characters. Others might discuss film production, distribution, or even the actors and filmmakers themselves.

While our official theme is mentorship, we will inevitably discuss other aspects of the student experience. In past years our conversations have ranged from time management to exam preparation to "the roommate from hell."

After class, we will continue our discussions over lunch in the Unit Three Dining Commons. I will provide free meal passes for seminar members who do not have meal plans. In addition, we will use a "secret" Facebook site for sharing thoughts, ideas, and videos.

**This seminar is part of the Food for Thought Seminar Series.**

Professor Chang received an AB degree in chemistry from Princeton and a PhD in biochemistry from UC Berkeley. He has been teaching at Cal since 1970. In 2005, he moved into a residence hall and became the first professor in the UC Berkeley Faculty in Residence Program. He has had several great mentors, and he has worked to mentor Cal students, both in person and in the Social Media. His Facebook group, "STUDY TIPS and OTHER GOOD THINGS," has over 25,000 members. He invites students to join.

### **Physics 24, Section I**

**Magnets: Science, Technology, and "Magic Tricks" (1 unit, P/NP)**

**Professor Frances Hellman**

**Friday 11:00-12:00, 397 Le Conte Hall, Class number: 24515**

Magnets and magnetic fields are essential to almost every aspect of our lives, from the most fundamental science experiments, to medical applications like the MRI, to computers and cars and navigation, to beautiful effects like the aurora borealis. The earth's magnetic field has made navigation possible for thousands of years, and keeps life on our planet safe from energetic particles coming from the sun and beyond. Magnetism has been known to exist for thousands of years, and yet requires twentieth-century physics (quantum mechanics) to understand the basic principles, such as what makes iron magnetic. Many Nobel Prizes have been given for discoveries related to magnetism, and magnets also make some of the best and most fun "magic tricks" or demonstrations. Magnetism is found on the tiniest scale (electrons) and the largest (galaxies). We will learn what makes iron magnetic, and copper not magnetic. I will show why a magnet pushes away a superconductor, which makes levitated trains possible, but how the strongest magnetic fields are produced by superconducting magnets. We will discuss why there are magnets in a car's starter motor, and in computer hard drives, and where current research efforts are. We will also talk about some of the most exciting topics in modern magnetism, such as what happens when you try to make magnets really small (a field known as "nanomagnetism") or when you try to blend together magnets and semiconductors ("spin electronics"). **This seminar is intended for anyone with an interest in understanding some science that is all around us. This seminar is part of the Food for Thought Seminar Series.**

Frances Hellman is Professor of Physics and of Materials Science and Engineering, a Senior Scientist at Lawrence Berkeley National Laboratory, and Dean of Mathematical and Physical Sciences at UC Berkeley, where she oversees the departments of Astronomy, Earth and Planetary Science, Mathematics, Physics, and Statistics. She is an expert in novel magnetic, semiconducting, and superconducting materials, especially in thin-film form. She is also a visiting scientist at the San Francisco Exploratorium, where she goes whenever possible to work with them on exhibits, some of them involving magnets. She received her BA in Physics from Dartmouth College and her PhD in Applied Physics from Stanford University. Before joining the Berkeley faculty in 2005, she held positions at AT&T Bell Labs and UC San Diego. Her faculty office is filled with magnets, and her laboratory is her workshop, where she delights in devising experiments on magnetic materials composed of rare and exotic ingredients.

**Plant and Microbial Biology 24, Section I**

**Encounters with Plants: First-hand Experiences with the Culture, Lore, and History of Plants (1 unit, P/NP)**

**Professor Lewis Feldman**

**Tuesday 11:00-12:00, 31 Evans Hall, Class number: 26653**

This seminar is meant to provide students the opportunity to explore ways plants have touched or influenced their lives, both personally and in an historical sense. Examples could include unique cultural uses of plants, perhaps as foods or medicines, or in a ceremonial way. As well, you could also use this seminar to explore an aspect of plants in which you may have an interest and about which you would like to learn more, such as the ways plants figure into art (e.g., Rousseau's Jungle paintings). Plants too have recently been associated with controversial issues, such as genetically engineered foods and with so-called crop circles. We want to use this seminar as a way of expanding our appreciation and understanding of this unique group of organisms. For the first few meetings we will have talks/discussions from individuals whose daily lives involve plants. For the remaining weeks each student will present a 20-minute "seminar" on a plant topic in which they have an interest. This talk should be based on readings and could also involve some personal, firsthand experiences with plants. Additionally, this seminar will expose students to the great breadth and variety of botanical resources available at Berkeley; it will include field trips to the Botanical Garden and the Herbaria, and a tour of the trees of the Berkeley campus. **For students thinking of majoring in the biological sciences, with an emphasis on plants, this course will provide them an overview of plant-related opportunities (e.g., research experiences, resources, faculty contacts) with which to explore their interest (and possible major) in plants. This seminar is part of the Food for Thought Seminar Series.**

Lewis Feldman teaches Introductory Biology (Biology 1B) in which he hopes to convey the wonder and satisfaction of working with plants. He also teaches upper division courses in plant structure and physiology, and for his research investigates the developmental biology of roots. In his spare time he also serves as an Associate Dean in the College of Natural Resources.

Faculty web site: <http://pmb.berkeley.edu/profile/lfeldman>

**Political Economy 24, Section I**  
**Political Economy in Contemporary Perspective (1 unit, P/NP)**  
**Senior Lecturer Alan Karras**  
**Tuesday 4:00-5:00, 279 Dwinelle Hall, Class number: 23437**

This seminar will require students to engage with current events, international and domestic, through the lens of political economy. Those who are enrolled will be required to read The New York Times and/or The Economist each week, identify issues of political economy that are being discussed, and present them to their peers for discussion. Differing perspectives on the news, as well as the different ways in which political economy theorists would interact with the events, will be discussed. Students should expect vigorous engagement and critical thinking.

Alan Karras is Associate Director of and Senior Lecturer in the International and Area Studies Academic Program. He is the author of *Smuggling: Contraband and Corruption in World History*, as well as several other books and articles on similar subjects. He is currently the Lead Media Author for the concise edition of a World History textbook, an author of the AP edition of the same book, and is also engaged in researching corruption in the British East India Company. He previously served as the Chair of the AP World History Development Committee for the College Board (as well as several other committees). He is also a member of the Boards of Editors for Cambridge University Press's forthcoming *Dictionary of World History* and the nine-volume *Cambridge World History*. In addition to smuggling and corruption, his research interests are in eighteenth-century Caribbean history, especially as it relates to more recent global issues in political economy.

Faculty web site: <http://iastp.berkeley.edu/People-Detail/Alan%20Karras>

**Portuguese 24, Section I**  
**Hello, Hello Brazil: An Introduction to Brazil in its Multiple Dimensions (1 unit, P/NP)**  
**Professor Candace Slater**  
**Tuesday 1:00-2:00, 45 Evans, Class number: 32175**

This seminar offers an introduction to Brazil--a vast and varied country--through music, films, literature and history with a dash of current politics thrown in for good measure. The title comes from the greeting on a very popular pan-Brazilian radio program that sought to unify a far-flung country through musical and cultural forms in the 1930's. It, like the course, seeks to engage different sorts of people--in this case, students from different backgrounds. While some of those who join the seminar will already know something about Latin America, others may simply be curious about a place that they find tantalizing, and both are welcome.

As the world's fifth largest country Brazil is both like and unlike other places in the Americas. This introduction seeks to stimulate an ongoing interest in some of its most important facets. **Of special interest to students interested in Latin America but open to all. Lectures and readings will be in English. While this is not a language class, we will learn some words in Portuguese.**

Candace Slater teaches Brazilian literature and culture, as well as courses on the Amazon, in the Department of Spanish and Portuguese. She has a secondary affiliation with the Energy and Resources Group. She is the author of seven books and many articles and has traveled widely throughout Latin America and the Iberian Peninsula.

Faculty web site: <http://spanish-portuguese.berkeley.edu/our-faculty/>

### **Rhetoric 24, Section 1**

#### **How to Read a Photograph (1 unit, P/NP)**

**Professor Michael Mascuch**

**Monday 12:00- 1:00, 7415 Dwinelle, Class number: 25477**

It is frequently said that 1. "a picture is worth a thousand words"; 2. "photography is a universal language"; and that 3. "seeing is believing." In this discussion-based course, we will put these clichés to the test, first by acquainting ourselves with and then by using various techniques of interpretation to explore the complex rhetoric of the photographic image. The objects of our interpretive analyses will be studied as they appear in contemporary public discourse, in such locations as the built environment, public and private institutional archives, museums, libraries, social media, print publications, etc. Weekly reading assignments will include, besides written essays, the study of specific photographic images situated on or near the UC Berkeley campus.

Required texts: A course reader.

Michael Mascuch was educated at UC Berkeley and Cambridge University, where he earned his PhD in Modern History. His research has focused on the history of autobiography and culture. His current research concerns photography and the Cambodian genocide, about which he is writing a book with the provisional title "Devastations of Vision."

Faculty web site: [http://rhetoric.berkeley.edu/people.php?page\\_id=1056&p=61](http://rhetoric.berkeley.edu/people.php?page_id=1056&p=61)

### **Rhetoric 24, Section 2**

#### **Arguing with Judge Judy: Popular "Logic" on TV Judge Shows (1 unit, LG)**

**Professor Daniel F. Melia**

**Wednesday 11:00-12:00, 7415 Dwinelle Hall, Class number: 32221**

TV "judge" shows have become extremely popular in the last three to five years. A fascinating aspect of these shows from a rhetorical point of view is the number of arguments made by the litigants that are utterly illogical, or perversions of standard logic, and yet are used over and over again. For example, when asked, "Did you hit the plaintiff?", respondents often say, "If I woulda hit him, he'd be dead!" This reply avoids answering "yes" or "no" by presenting a perverted form of the logical strategy called "a fortiori" argument ["from the stronger"] in Latin. The seminar will be concerned with identifying such apparently popular logical fallacies on "Judge Judy" and "The People's Court" and discussing why such strategies are so widespread. It is NOT a course about law or "legal reasoning." **Freshmen who are interested in argument and persuasion in a television and courtroom setting.**

Daniel Melia is Professor Emeritus in the Department of Rhetoric, where he has taught for forty-three years.

Faculty web site: [http://rhetoric.berkeley.edu/people.php?page\\_id=1056&p=62](http://rhetoric.berkeley.edu/people.php?page_id=1056&p=62)

**Vision Science 24, Section I**  
**The Human Eye (1 unit, P/NP)**  
**Professor Richard C. Van Sluyters**  
**Friday 2:00-4:00, 491 Minor Hall, Class number: 28853**

**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 a standard clinical instrument to view the eye will be demonstrated. Students will then employ this instrument to observe one another's eyes. Digital images of the iris will be captured and provided to each student. Examples of the types of 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? What structural and functional changes in the eye are found in various ocular diseases?

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.

Faculty web site: <http://vision.berkeley.edu/VSP/content/faculty/facprofiles/vansluyters.html>



## **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. Some of these courses fulfill Letters and Science breadth requirements; for details 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.

**Electrical Engineering 39, Section I**  
**Gadgets Electrical Engineers Make (2 units, P/NP)**  
**Professor Jeffrey Bokor**  
**Thursday 10:00-12:00, 220 Jacobs Hall, Class number: 27697**

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, and the M.S. and Ph.D. degrees in electrical engineering from Stanford. After a stint at the legendary Bell Labs, Dr. Bokor joined the faculty of the EECS department at UC Berkeley, with a joint appointment at the Lawrence Berkeley National Laboratory (LBNL). His current research activities include new devices for nanoelectronics, and ultrafast processes in magnetic materials.

Faculty web site: <http://www.eecs.berkeley.edu/~jbokor/>

**Legal Studies 39D, Section I**  
**Current Political and Moral Conflicts and the U.S. Constitution (2 units, LG)**  
**Mr. Alan Pomerantz**  
**Monday 10:00-12:00, 106 Wheeler Hall, Class number: 24778**

The debate about politics and morals has moved steadily into the realm of the Supreme Court, but people differ on what exactly the role of the Court should be. Some have strongly argued that the Court's interpretation and application of the Constitution have adversely affected our fundamental rights and usurped powers from other branches of government. This position claims the Court has created an "Imperial Judiciary," a supreme authority, not a supreme court. Others argue as strongly that the Court has acted properly to find and protect evolving fundamental freedoms and individual rights in the face of unprecedented political and governmental efforts to limit them. This position claims the Court has, in fact, fulfilled the role envisioned for the Court by the Constitution. This seminar will follow the Socratic method in examining moral and political issues that have a constitutional basis and the Court's participation in the debate on topics such as transgender and gay rights (including gay marriage); "sincerely held religious beliefs" as a defense to compliance with anti-discrimination laws; abortion; privacy; limitations on speech including "hate" speech, college speech codes, trigger warnings and micro-aggressions; and euthanasia. We will read Supreme Court cases, as well as political and legal commentary from across the political spectrum. The prime focus of the seminar is to encourage students to develop their critical thinking skills. Accordingly, students are expected to develop, support and defend their own views and opinions regarding the relevant topics.

Alan J. Pomerantz, Esq., is a practicing lawyer and Senior Counsel at Pillsbury Winthrop Shaw Pittman, a major international law firm. A graduate of the NYU School of Law, he also studied under the Fulbright

Program in Chile and received an advanced legal degree from the University of Amsterdam (Netherlands). He has lectured and taught widely, including at the NYU School of Law, NYU College of Arts and Science, the University of Amsterdam, Columbia Graduate School, and the University of Concepcion (Chile). He has published numerous articles and contributed to several treatises on legal topics. Mr. Pomerantz is recognized by several peer publications as one of the world's leading lawyers. He is also the recipient of the 2015 Fulbright Commission Global Citizens Award, and the 2016 Global Award for his legal work. Mr. Pomerantz has participated in important and controversial matters affecting individual rights, including the right of public artistic expression, the right of privacy for acts of consenting adults, and numerous free speech cases.

**Native American Studies 90, Section I**

**Myth, Memory, and History: Understanding Native America (4 units, LG)**

**Lecturer Diane Pearson**

**Monday, Wednesday and Friday 11:00-12:00, 223 Dwinelle Hall, Class number: 22671**

This course provides an overview of the history of the indigenous peoples of the Western Hemisphere, and proceeds from the premise that knowledge of Native America is essential to the study of the Western Hemisphere. It will survey a number of societies, cultures, lifestyles, and contemporary and historical issues. This seminar may be used to satisfy the Social and Behavioral Sciences or Historical Studies breadth requirement in Letters and Science.

Dr. Pearson holds a Ph.D. in American Indian Studies and specializes in American Indian law and policy, societies and culture, and education.

Faculty web site: <http://ethnicstudies.berkeley.edu/faculty/profile.php?person=70>

**Rhetoric 39, Section I**

**Movement, Awareness, and Learning (2 units, LG)**

**Professor Marianne Constable**

**Thursday 12:00-2:00, 2401 Bancroft, Room 10, Class number: 32220**

How do we learn? What do feeling, sensing, thinking, and doing have to do with learning? What does movement have to do with all of these? (How) can one learn to move more easily and become more aware of oneself in movement? How does one learn to learn? This weekly seminar will have two parts: during the first hour, you will do a Feldenkrais Method (R) Awareness-through-Movement lesson (ATM); then, after a short break, we will discuss the lesson and short readings and videos tailored to your interests. Students will be asked to reflect on their own experiences with the lessons and to relate such experiences to the concerns and interests in education and/or performance that they bring to the class. Attention will be paid to oneself in place/space; breath; ease, timing, and range of movement; use of the self and self-image; voice; repetition and rest. Additional themes may include habit, intention, and strain; the "mind-body problem"; perception and observation; and so forth. **The seminar is open to open-minded students interested in exploring awareness, movement, and learning. No prior experience in movement classes or performance studies, or rhetoric is needed.**

In addition to being a professor of Rhetoric at UCB, Marianne Constable is a certified practitioner of the Feldenkrais Method (R).

## 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.

**Electrical Engineering 84, Section 1**  
**Engineering for the Brain: Mind Meets Matter (1 unit, P/NP)**  
**Professor Chunlei Liu**  
**Tuesday and Thursday 1:00-2:00, 299 Cory Hall, Class number: 27778**

**Meets the first half of the semester.**

Advances of neural engineering, both physical and biological, are rapidly changing the way we see and interact with our brain. Modern imaging allows us to observe our brain in action noninvasively; brain stimulation allows us to modulate neuronal activities and behaviors; genetic editing allows us to modify the basic building blocks of the brain. While these technologies have brought enormous medical benefits and are improving our knowledge of the inner workings of the brain, they also raise many profound questions. The course will introduce modern neural engineering methods in a non-technical way. We will discuss their medical and scientific impact and their legal, ethical and societal implications. **The course is open to all majors. There will be no equations to be solved. Only a curious mind is required.**

Dr. Chunlei Liu is an Associate Professor in the Department of Electrical Engineering and Computer Sciences, and the Helen Wills Neuroscience Institute. He received his PhD from Stanford University. Before joining UC Berkeley, he was an Associate Professor of Radiology and Biomedical Engineering at Duke University. He currently researches in brain imaging and modulation.

**Electrical Engineering 84, Section 2**  
**Hands-on Ham Radio (2 units, P/NP)**  
**Professor Michael Lustig**  
**Monday 10:00-12:00, 531 Cory Hall, Class number: 28014**

Amateur Radio (Ham Radio) is a popular hobby and service in which licensed Amateur Radio operators (hams) operate communications equipment. Although Amateur Radio operators get involved for many reasons, they all have in common a basic knowledge of radio technology and operating principles, and pass an examination for the FCC license to operate on radio frequencies known as the "Amateur Bands." These bands are radio frequencies reserved by the Federal Communications Commission (FCC) for use by ham radio operators.

The role of amateur radio has obviously changed with the presence of the internet. Remarkably, amateur radio today offers unique opportunities and capabilities due to its independence on commercial infrastructure. For example, it is a legal ground for hands-on experimenting with wireless communication technology and it allows communication in emergencies and from remote areas.

What can you do as a ham?

- \*Talk to people (near and far)
- \*Build stuff (amps, sdr's, antennas, receivers)
- \*Emergency communications (emcom)
- \*First person view (FPV) vehicles (drones) at much higher power
- \*Hit satellites, moon, meteors, airplanes (with radio waves! ... not

something else)

\*Digital communication with Automatic Positioning and Reporting System, packet radio

\*Use Repeaters covering Bay-Area, California and the United States' mesh networks

In the seminar we will learn about ham radio and experience it. The idea is that students will be able to take the ham licensing exam and become licensed radio operators at the end. Each student will also get to keep a VHF/UHF handheld amateur radio at the end of the course.

Michael (Miki) Lustig is an Assistant Professor in EECS. He joined the faculty of the EECS Department at UC Berkeley in Spring 2010. He received his B.Sc. in Electrical Engineering from the Technion, Israel Institute of Technology in 2002. He received his Msc and Ph.D. in Electrical Engineering from Stanford University in 2004 and 2008, respectively. His research focuses on medical imaging, particularly Magnetic Resonance Imaging (MRI), and very specifically, the application of compressed sensing to rapid and high-resolution MRI, MRI pulse sequence design, medical image reconstruction, inverse problems in medical imaging and sparse signal representation.

Faculty web site: <http://www.mlustig.com>

### **English 84, Section I**

#### **High Culture, Low Culture: Modernism and the Films of the Coen Brothers (2 units, LG)**

**Professor Julia Bader**

**Monday 1:00-4:00, 300 Wheeler Hall, Class number: 21265**

We will concentrate on the high and low cultural elements in the noir comedies of the Coen brothers, discussing their use of Hollywood genres, parodies of classic conventions, and representation of arbitrariness. We will also read some fiction, including stories from Jhumpa Lahiri's *Interpreter of Maladies*, and attend events at the Pacific Film Archive and Cal Performances.

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

Faculty web site: <http://english.berkeley.edu/profiles/11>

### **Integrative Biology 84, Section I**

#### **Natural History of Berkeley (1 unit, P/NP)**

**Lecturer Alan Shabel**

**Thursday 2:00-3:00, 230 Mulford Hall, Class number: 21803**

California is a natural history phenomenon, with a complex geology, a diversity of ecosystems, and a rich flora and fauna. In this seminar, you will be introduced to the natural history of Berkeley through a study of the common plants and animals of the wildland-urban interface. We will combine a series of local field trips with a study of museum specimens and short lectures. There will be no exams or homework assignments. In Fall 2018 we will give special attention to the role of fire in East Bay ecosystems. The course is open to freshmen and sophomores.

Professor Alan Shabel is a specialist on mammals with a primary focus on African otters, but his interests range across ecological levels of organization, and he is fascinated by the natural history of California and Berkeley.

## **Integrative Biology 84, Section 2**

### **Fitness and Health: From Head to Toe Now and in the Future (1 unit, P/NP)**

**Professor George Brooks**

**Wednesday 3:00-4:00, 5192 VLSB, Class number: 32197**

Professor George A. Brooks will lead a seminar intended to provide students with information and skills to take charge of their wellness-related behaviors and adopt a health lifestyle that will serve them well while at Cal and through life. Discoveries by Brooks and his lab members, along with related findings of others will serve as the basis for topics of discussion in the seminar. Those topics will include the health-related effects of regular physical activity and proper nutrition on functioning of the heart, lungs, blood, muscles, kidneys and brain. As well, discussion will involve the acute and chronic effects of changes in environment, such as high altitude, heat and cold on us. And finally, we will discuss the effects of healthy behavioral practices on relieving stress, mitigating depression and avoiding unhealthy practices such as substance abuse.

As a collegiate athlete George Brooks was very much interested in understanding physiology and biochemistry to improve his time in the 440 and 880 yard runs. When his competitive days were over Brooks earned a Ph.D. in Exercise Physiology at the University of Michigan and subsequently took a post-doctoral fellowship in Muscle Biology and the University of Wisconsin. Brooks then joined the University of California Berkeley (Cal) Faculty in July of 1971. As a young exercise physiologist Brooks helped lead the transition from traditional organ systems physiology to include major aspects of cell and molecular biology, specifically in the areas of metabolism, mitochondrial bioenergetics and biogenesis. At Cal Brooks retained an interest in understanding human performance during exercise and at high altitude, but he turned his attention to studying basic metabolic processes to better understand human capabilities in health and disease. In recent years, Brooks and colleagues developed two working hypotheses: "The Lactate Shuttle" and the "Crossover Concept." Research on the Lactate Shuttle has elucidated the pathways and controls of lactate (lactic acid) formation and removal before, during and after exercise. The work involved studies on humans and animals, the use of isotope tracers, muscle biopsies, arterial-venous difference, cardiovascular, pulmonary and endocrine measurements. Along the way Brooks and colleagues discovered that the body makes lactate all the time, and that endurance training develops the capacities to produce, remove and utilize lactate as a fuel energy source. Hence, studies testing Lactate Shuttle theory have revealed three functions of lactate; lactate is a fuel energy source, the main gluconeogenic precursor, and a signaling molecule with autocrine, paracrine and endocrine functions. In fact, they demonstrated that lactate is favored as a fuel by working red muscle, heart, liver and brain. Most recent research shown that lactate is a favored brain fuel in healthy and injured persons and clinical research studies are under way to improve outcomes in traumatic brain injury patients using lactate supplementation. Recently also Brooks and colleagues noted similarities between metabolic responses in exercise and cancer; a feature of cancer cells being aerobic glycolysis and lactate production (i.e., the Warburg Effect). Currently, independent investigators and pharmaceutical firms are attempting to control cancer cell proliferation by developing Lactate Shuttle blockers. Along the way they also discovered that the muscle respiratory apparatus is comprised of a large network, a "mitochondrial reticulum" that doubles in mass in response to regular exercise because training increases the expression of hundreds of genes. Their studies on mitochondrial biogenesis revealed important roles for free radicals in cellular adaptations, and several of their papers are "Citation Classics," having been cited thousands of times in the scientific literature.

At Cal Professor Brooks has served on many departmental and University committees. As well, he has served on several NIH grant review committees (Study Sections), and for the National Academies of Science he helped compile the science behind dietary and physical activity guidelines. Brooks has received Honor Awards from the American Physiological Society and the American College of Sports Medicine. Drawing on expertise in applying isotope tracer technology to study metabolism in men and women in vivo, important lessons were learned about how regular exercise and sound nutrition promote body health and extend the health span.

**Vision Science 84, Section I**  
**Current Topics in US Healthcare (1 unit, P/NP)**  
**Professor Kenneth Polse**  
**Thursday 11:00-1:00, 491 Minor Hall, Class number: 28839**

**August 23 & 30; September 6, 13, 20, & 27; and October 4, 2018.**

Problems associated with affordability, accessibility and quality of health care in the US began to escalate in the late 1980s. Over the past twenty-five years, both Republican and Democratic administrations have attempted unsuccessfully to address these problems. In 2008, President Obama was elected on a mandate to change the health care system in a way that would provide affordable and accessible care to all Americans. After considerable debate, controversy, and compromise, the Patient Protection and Affordable Health Care Act of 2010 (ACA) was signed into law by President Obama on March 23, 2010. The ACA (often referred to as Obamacare) was the most significant health care legislation passed since the Medicare Act of 1964. Since its inception, Republicans have attempted to repeal the law over 40 times. Its constitutionality has been challenged twice and upheld by the US Supreme Court. Today, the majority of US citizens support the continuation of Obamacare (with some modifications). In response to Congress' inability to pass repeal and replace legislation, President Trump has used executive action to make substantial changes to the present law. Among the President's most concerning actions was the elimination of the health insurance individual mandate as part of the recently passed Tax Reform Bill of 2018. Eliminating the individual mandate, which requires all Americans to have health insurance, fundamentally changes the individual health insurance market which is at risk of collapse. Even though the ACA is still law, the future of the US health care system is unclear and the moral obligation to provide health care to millions of uninsured individuals and families under the ACA is beyond reach. Even those who receive health care coverage through their employer, the VA, Medicaid or Medicare are likely to witness substantial changes over the next few years due to the actions of Congress and the President.

The seminar will begin by examining health care prior to Obamacare. This will highlight the serious problems in health care delivery prior to the ACA. Following this review, the class will look at some of the important strengths and weaknesses of Obamacare, as well as the changes that are urgently needed to improve the ACA. The class will examine 2017 Congressional efforts to repeal and replace the ACA and discuss the likelihood of future legislative attempts to repeal the ACA that are likely to resume in 2018 or 2019. Moving forward we will look at health care in other developed countries where access to affordable and high-quality care is a right, not a privilege. Examining health care in other countries will provide considerable insight into how the strongest health care systems function in other high-income nations where health care is considered a right, not a privilege. Finally, the seminar will conclude by exploring paradigms to reform the US health care system in a way that achieves the Triple Aim: better care, lower costs and improved health of all Americans.

The seminar is divided into 8 modules which cover the topics listed above. The class has a website that students will use to prepare for each session, stimulate to discussion and receive notices of current news related to health care delivery. Typically, for any given module, the class will review an article, news story, media presentation, or editorial that will serve as the platform for class discussion/debate. Two to three times during the course, students will be divided into groups of 3 and asked to prepare a short presentation on a specific topic, which will be followed by class discussions.

Students interested in pursuing a career in health care delivery (e.g., physician, nurse, etc.), health care planning/administration, health law, or simply exploring the economic burden of health care on US society will find the seminar topics of interest. **Students interested in pursuing a career in health care delivery (e.g., physician, nurse, etc.), health care planning/administration, or simply just interested in the impact of current health care on society should find most of the topics covered of interest.**

From 1972-2004 Professor Polse served as faculty member, Clinic Director, and Associate Dean in the School of Optometry, University of California, Berkeley (UCB). Recently retired, Dr. Polse is currently Professor of Graduate Studies at UCB. His research developed from years of clinical experience,

convincing him that it is the clinician's astute observations that often drive the research agenda. He also believes that discovery and clinical implementation require close collaborative efforts between basic and clinical scientists, a principle that has guided his research career. Some of Professor Polse's professional services and honors include President, International Society for Contact Lens Research; memberships on the AOA Council on Research and the National Advisory Eye Council (NIH); a Senior Fulbright Fellowship; AAO Garland Clay Award; AAO Max Shapero Lecture; BCLA Principal Keynote Speaker; UCB Sarver Endowed Chair; and Montague Ruben Medal. Since 1974, Professor Polse has had many students, residents, and post-doctoral fellows participate in his laboratory. He has received continuous research support from NIH and Industry for thirty years, resulting in many successful studies (including two NIH-sponsored randomized clinical trials) and over 140 papers published in peer-reviewed journals. Over the past several years Dr. Polse has become interested in the history and development of health care both in the US and in other countries. From this interest, he has been able to compile numerous references, videos and interviews which are used in the seminar to illustrate key points about US health delivery.

**Vision Science 84, Section 2**  
**Comparative Eye Design (1 unit, P/NP)**  
**Professor Christine Wildsoet**  
**Thursday 4:00-5:00, 394 Minor Hall, Class number: 28840**

The eyes have it in terms of diversity of design. There are lessons to be learned from comparing eye designs across the animal kingdom. This seminar will review and compare the structure of various components of the eye and its motor and neural accessories, by way of understanding the diversity of eye designs, as well as their strengths and limitations from a functional perspective. Examples where such analyses have spawned new bioengineering lines of research will be given. The course includes hands-on activities and an excursion. **This seminar examines and compares the eyes and vision of different animals, as primitive as jellyfish to other primates, in the context of their usual habitat and behavior. Those interested in ecology, vet med through to medicine and optometry may find this topic interesting, especially if you are curious about what eyes look like, as some eye dissections are included.**

**This seminar is designed for students interested in eyes and/or vision and curious about biological design and evolution, with possible career goals of vision research or eye-related health professions.**

Professor Wildsoet is on the faculty of the School of Optometry, where she is involved in pharmacology teaching and coordinating two summer research programs for Optometry students. She is also a member of the Vision Science group. Her research is multidisciplinary as is her research group, which includes basic scientists and clinicians, both local and international. The focus of research in her lab is myopia (nearsightedness), specifically the mechanisms underlying the development of myopia and its clinical management. The overriding goals of this research is understand the environmental factors driving the current myopia epidemic and the development of novel and improved treatments for controlling myopia. Under optimal conditions, young eyes adjust their eye growth to correct neonatal focusing errors. Understanding how this growth regulatory process is derailed in myopia can provide the keys to new treatments. Over the course of her research career, Professor Wildsoet has had the opportunity to work with a range of animals and birds to address other questions related to eye design as well.

Faculty web site: [http://wildsoetlab.berkeley.edu/index.php?title=Wildsoet\\_Lab](http://wildsoetlab.berkeley.edu/index.php?title=Wildsoet_Lab)

**Vision Science 84, Section 3**  
**Introduction to Vision Science (2 units, P/NP)**  
**Professor Susana Chung**  
**Tuesday 4:00-6:00, 394 Minor Hall, Class number: 28841**

**Class will meet every Tuesday for the first eight weeks of the semester.**

This is an introductory course to vision science. In this course, we will briefly introduce and discuss different areas of vision science, including, but not limited to, the following topics: visual illusion, depth perception, eye movements, color vision. The course is intended for someone who might be interested in pursuing a graduate degree or career related to vision (eye-care providers or vision scientists).

Dr. Susana Chung is a Professor of Optometry and Vision Science. She teaches courses on visual perception to graduate students in the Optometry Program and the Vision Science Graduate Program.

Faculty web site: <http://optometry.berkeley.edu/faculty/susana-chung-od-phd-faa0>