

Winter 2009 Schedule

Four-Unit Courses:

Shedding Light on Life – An Introduction to Biophotonics (IST-8A-001: 4 Units)

Marco Molinaro, Biophotonics

Biophotonics is the science of generating and harnessing light (photons) to image, detect and manipulate biological materials. Biophotonics is an emerging area of scientific research that uses light and other forms of radiant energy to understand the inner workings of cells and tissues in living organisms. The approach allows researchers to see, measure, analyze and manipulate living tissues in ways that have not been possible before.

Biophotonics is used in BIOLOGY to study and probe for molecular mechanisms, function of proteins, DNA and other important molecules. It is used in MEDICINE to study tissue and blood at the macro (large-scale) and micro (very small scale) organism level to detect, diagnose and treat diseases in a way that are non-invasive to the body. The National Science Foundation (NSF) has recently funded a major Science and Technology Center (STC) at UC Davis to thoroughly explore the subject of biophotonics. The Center for Biophotonics Science and Technology (CBST) at UC Davis is the only center in the country funded by the National Science Foundation devoted to the study of light and radiant energy in biology and medicine. The center brings together scientists, industry, educators and the community to research and develop applications for biophotonics. This course involves lectures, discussions with researchers, field-trips, hands-on activities, and demonstrations to other students and the public.

GE: Science and Engineering, Topical Breadth, and Writing

Biotechnology: The Science and Issues Surrounding The Interface of Life Sciences and High Technology

(IST-8A-002: 4 Units)

Martina Newell-McGloughlin, Director, UC Systemwide Biotechnology Research & Education Program

The goals of this course are to provide an integrated picture of the fields at the confluence of the life sciences and high technologies that include biotechnology, information technology, and nanotechnology. The course will cover, at a very basic level, the technologies involved, explain the progress made to-date and outline the future of the technology for each application. This will include these technologies as they apply to agriculture including crop production and animal biotechnology, the environment, industrial biotechnology and animal and human health. The major contributions biotechnology and nanotechnology will make to medicine and health care, for humans and animals, in providing improved approaches to the diagnosis, treatment, and prevention of disease will be discussed. On the other side of the issue, the emergence of Biotechnology has raised many questions of great public interest, including the safety of genetically modified organisms (GMOs) in food and to the environment, and ethical issues on genetic privacy, stem cell research, cloning and gene therapy. These will be discussed in the context of the technology. There will be field trip to a local biotech company.

GE: Science and Engineering, Topical Breadth, and Writing

Introduction to Art and the Study of Art in Museums/Galleries/Artists' Studios

(IST-8B-001: 4 Units)

Gina Werfel, Art & Art History

This course will introduce students to basic concepts in drawing supplemented by study of works of art in reproduction and in area museums and galleries. Students will be expected to keep journals of drawings and writings in response to the class' activities. A list of supplies and trip dates will be announced the first day of class. Attendance at two lectures by visiting artists will be required. These typically take place at 4:30 on Thursdays. The field trips will be scheduled during class/seminar time, but they may require additional time commitments as we will go to San Francisco and Sacramento locations. Expect to spend

\$75-100 for course materials and fieldtrip travel, and a \$50.00 lab fee will be deducted from your UC account (financial aid sponsored by ISHP may be available). A one-unit seminar will be required of all students who register for this course.

GE: Arts and Humanities, Topical Breadth, and Writing

The Examined Life

(IST-8C-001: 4 Units)

Naomi Janowitz, Religious Studies

Socrates said that the unexamined life is not worth living. What then is the examined life? We will consider other people's examinations of their lives (John Stuart Mill, Rousseau) and also examine our own lives, including our pasts (what were we like as children), and presents (who are we now) and our conscious and our unconscious wishes for the future (through dreams).

GE: Social Sciences, Topical Breadth, and Writing

Indigenous What: People, Groups, Cultures or Else? Localizing Identity with Globalized Tools **(IST-8C-002: 4 Units)**

Frank Hirtz, Community & Regional Development

Fair trade coffee, world music, holistic medicine and deep ecology: The modern world has discovered the original the indigenous, the 'real' thing. But what and who is indigenous? Who decides on what grounds that someone is or is not indigenous? Can an individual be indigenous or only groups, populations, peoples? Is indigenous culture comparable to (e.g.) gay culture, Macedonian culture or organizational culture? Why should the differences thus constituted have consequences and if so, which?

These are some, but only some, of the questions that this course wants to explore. Indigenism affirms highly localized differences, yet, uses symbols and norms of states and statehood, simultaneously embracing notions of universally accepted human rights. This paradox is worth to explore and will touch upon very different academic disciplines.

The central aims of this course are:

- To introduce students to some major theoretical approaches in the study of those aspects that constitute (indigenous) identity and issues of political power
- To equip students with theoretical tools necessary to make connections between the ways in which indigenous identity is invoked or imposed in social movements as well as in national/international politics
- To expand students' notions of what constitutes 'the political' beyond the conventional political institutions of the national state
- To explore (student selected) different manifestations of indigenous politics throughout the world as case studies

GE: Social Sciences, Topical Breadth, and Writing

Lower Division Seminar:

Research Opportunities In The Biological Sciences

(FRS-003-20: 1 Unit)

Ken Shackel, Plant Sciences

Enrollment limited to twelve students. This seminar exposes students to current research topics in Biological Sciences at UC Davis. Faculty members make short presentations to the group and take them on a tour of their laboratories and research facilities. Recent speakers/topics have included (such diverse elements as): Judy Stern/Obesity and nutrition research, Dave Rizzo/Sudden Oak Death, Rachel Schwartz for Bernie May/Conservation Genetics, Peter Rodman/Dispersal in Titi Monkeys, Mike Parella/Advancing IPM in Greenhouse Crops, Barry Wilson/Cell Culture, Toxicology and Animal Research, Abhaya Dandekar/Genetic Engineering, Brad Shaffer/Amphibian Reptile Ecology.

No GE Credit

**Adjunct to: Introduction to Art and the Study of Art in Museums/Galleries/Artists' Studios
(FRS-003-21: 1 Unit)
Gina Werfel, Art & Art History**

Only open to students registered in "Introduction to Art the Study of Art in Museums/Galleries/Artists' Studios". This seminar allows for the extra time needed to accommodate fieldtrips to surrounding artist's studios and/or museums. Participants may be asked to arrange their own carpools. This course is graded Pass/No Pass.

No GE Credit

Mid-Level Seminar:

**Introduction to Scientific Research
(IST-94: 1 Unit)
Terence Murphy, Plant Biology & Eric Rauchway, History**

This course is designed to give students first-hand experience of the research community as preparation for IST-194 courses in the following year. Classes will include guest lecturers from research programs, and possibly even field trips to some of these labs. This course is graded Pass/No Pass.

Professor Murphy oversees students in Science & Engineering; Professor Rauchway oversees students in History and the Social Sciences.

No GE Credit

Upper Division Research:

**Special Study for Integrated Studies Honors Students
(IST-194HB: 4 Units)
James Shackelford, Chemical Engineering & Materials Science & Eric Rauchway, History**

This is a research course to be taken by students who have chosen to participate in the Integrated Studies Honors Program in their Junior and Senior years. It may be repeated once for credit, and is intended to be taken in both the Junior and Senior years. Its counterpart, IST-194HA (also a requirement for upper division ISHP students), is offered in the fall.

Professor Shackelford oversees students in Science & Engineering; Professor Rauchway oversees students in History and the Social Sciences.

No GE Credit