This guide contains a list of courses by track (and descriptions) available for Environmental Studies Majors during Spring 2015.

**Upper level courses** often have pre-requisites, contact the instructor or department to confirm you meet those.

Changes in the listed courses might occur after the publication of this resource. Therefore, it is strongly recommended that you check SIS to make sure the information is correct.

Please let Sara Gomez know (sara.gomez@tufts.edu) should issues regarding a course arise
**Cores and special listings**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Instructor</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>EC 005</td>
<td>Principles of Economics</td>
<td>Staff</td>
<td>Core course</td>
</tr>
<tr>
<td>EC 008</td>
<td>Principles of Economics with Environmental Applications</td>
<td>Ujjayant Chakravorty</td>
<td>Core course</td>
</tr>
<tr>
<td>EOS 002</td>
<td>Environmental Geology w/ Lab</td>
<td>John Ridge</td>
<td>Core course</td>
</tr>
<tr>
<td>UEP 094</td>
<td>Environmental Policy, Planning and Politics</td>
<td>Robert Russell</td>
<td>Core course</td>
</tr>
<tr>
<td>ENV 099</td>
<td>Environmental Internship</td>
<td>Colin Orians</td>
<td>Internship</td>
</tr>
<tr>
<td>ENV 095</td>
<td>Special topics in Environmental Studies</td>
<td>Andrew Tirrell</td>
<td>Lunch and Learn Seminar series- does not count towards major</td>
</tr>
</tbody>
</table>

Unlisted courses that are environmentally-themed might be taken to count towards individual tracks if approved, but not to replace core courses. Examples include: Departamental seminars, Experimental College classes, University Seminars and Advanced Independent Research courses offered by different departments.
Track I: Environmental Science

ANTH 040  Biological Anthropology  Stephen Bailey
ANTH 042  Extreme Environments: human adaptability to novel habitats  Stephen Bailey
BIO 106  Microbiology w/Lab  Staff
BIO 130/ENV 130  Animal Behavior  Philip Starks
BIO 133  Ecological Models and Data  Elizabeth Crone
BIO 164/ENV 164  Marine Biology  Jan Pechenik
BIO 180  Seminar in Conservation Biology  Michael Reed
CEE 032  Environmental Engineering Principles  Kurt Pennel
CEE 054/ENV 054  Fundamental Epidemiology  Mark Woodin
CEE 194/ENV 196-R  Special topics: Intro to Remote Sensing  Elena Naumova
CEE 214  Water Resource Systems  Jam Limbrunner
CHEM 042  Analytical Chemistry  Samuel Kounaves
EC 030/ENV 030  Environmental Economics  Brooke Jack
ENV 107/GIS 101  Intro to Geographic Information Systems  Carl Zimmerman
ENV 197/GIS 102  Advanced GIS  Carl Zimmerman
ENV 199  Senior Honors Thesis  Colin Orians
EOS 052  Paleoclimate  Andrew Kemp
EOS 104  Geological Applications of GIS  Jacob Benner
ES 56  Probability and Statistics  Wayne Chudyk
MATH 021  Introductory Statistics  Patricia Garmirian/Staff
NUTR 231  Fundamentals of GIS for Food, Agr. and Env. Appl.  Paul Cote
PHIL 033  Logic  Russinoff
PHY 043  Electricity and Magnetism II  Pierre-Hugues Beauchemin
UEP 232/ENV 193  Intro to GIS  Barbara Parmenter

Track II: Sustainability, Policy and Equity

ANTH 042  Extreme Environments: human adaptability to novel habitats  Stephen Bailey
ANTH 178  Animals and Posthuman Thought  Alex Blanchette
BIO 164/ENV 164  Marine Biology  Jan Pechenik
BIO 180  Seminar in Conservation Biology  Michael Reed
BIO 185  Food for All: Ecology, Biotechnology and Sustainability.  Colin Orians
CD 140  Problems of Research: Statistics  Sean Parker
Track II: Sustainability, Policy and Equity (continued)

CEE 054/ENV 054 Fundamental Epidemiology
CEE 158 Occupational and Environmental Health
CEE 173 Health Effects and Risk Assessment
CH 030 Community Health Methods
EC 030/ENV 030 Environmental Economics
EC 107 Econometric Analysis
EC 130 Topics in Environmental Economics
EC 132 Economics of Energy Markets
EC 191-02 Intermediate Selected Topics: Urbanization in the Devel. World
ENV 152 Seminar in Environmental Negotiations
ENV 107/GIS 101 Intro to Geographic Information Systems
ENV 186 Coastal Communities and Marine Resource Management
ENV 196-0R/CEE 194 Selected Topics: Introduction to Remote Sensing
ENV 197/GIS 102 Advanced GIS
ENV 199 Senior Honors Thesis
ES 027/ENV 027 Public Health Engineering
NUTR 221 Global Food Business
NUTR 224 Community Food Planning and Programs
NUTR 233 Agricultural Science and Politics I
PHIL 24 Introduction to Ethics
PHIL 124 Bioethics
PS 103 Political Science Research Methods
PS 188-03 Gender issues in World Politics
PSY 013 Social Psychology
PSY 031 Statistics for Behavioral Science
PSY 032 Experimental Psychology
PSY 036 Experimental Social Psychology
SOC 113 Urban Sociology
UEP 094/ENV 094 Environmental policy, planning and politics
UEP 101 Land Use Planning
UEP 201 Land Use Planning II
UEP 206-01 Planning for Low Impact Development
UEP 221 Climate Change Policy
UEP 230/PJS 131 Negotiation and Conflict Resolution
UEP 232/ENV 193 Intro to GIS
UEP 281 Toxic Chemicals & Human Ecology
UEP 284/ENV 284 Developing Sustainable Communities

Mark Woodin
David Gute
Anne Marie Desmarais
Staff
Brooke Jack
David Garman
Gilber Metcalf
Anna Hardman
Andrew Tirrell
Carl Zimmerman
Andrew Tirrell
Elena Naumova
Carl Zimmerman
Colin Orians
David Gute
James Tillotson
Hugh Joseph
Timothy Griffin
David Denby
Mitchell Silver
Mazaheri or Masuoka
Richard Eichenberg
Jessica Remedios
Lara Slobada
Heather Urry
Keith Maddox
Katherine Vesitis
Robert Russell
Jon Witten
Jon Witten
Scott Horsley
Ann Rappaport
Robert Burdick
Barbara Parmenter
Shelly Krimsky
Agyeman
## Track III: Environmental Communication

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Instructor</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANTH 020</td>
<td>Global Cities</td>
<td>Cathy Stanton</td>
</tr>
<tr>
<td>ANTH 040</td>
<td>Biological Anthropology</td>
<td>Stephen Bailey</td>
</tr>
<tr>
<td>BIO 002</td>
<td>Biology and the American Social Contract</td>
<td>Michael Romero</td>
</tr>
<tr>
<td>BIO 010/ENV 010</td>
<td>Plants and Humanity</td>
<td>George Ellmore</td>
</tr>
<tr>
<td>BIO 164/ENV 164</td>
<td>Marine Biology</td>
<td>Jan Pechenik</td>
</tr>
<tr>
<td>BIO 180</td>
<td>Seminar in Conservation Biology</td>
<td>Michael Reed</td>
</tr>
<tr>
<td>BIO 185</td>
<td>Food for All: Ecology, Biotech. and Sust.</td>
<td>Colin Orians</td>
</tr>
<tr>
<td>CD 140</td>
<td>Problems of Research: Statistics</td>
<td>Sean Parker</td>
</tr>
<tr>
<td>CEE 158</td>
<td>Occupational and Environmental Health</td>
<td>David Gute</td>
</tr>
<tr>
<td>CH 030</td>
<td>Community Health Methods</td>
<td>Staff</td>
</tr>
<tr>
<td>DR 027</td>
<td>Public Speaking</td>
<td>Deborah Cooney</td>
</tr>
<tr>
<td>EC 030/ENV 030</td>
<td>Environmental Economics</td>
<td>Brooke Jack</td>
</tr>
<tr>
<td>EC 107</td>
<td>Econometric Analysis</td>
<td>David Garman</td>
</tr>
<tr>
<td>ELS 105-01/02</td>
<td>Entrepreneurial Marketing</td>
<td>Derby/Finn</td>
</tr>
<tr>
<td>ENG 160/ENV 160</td>
<td>Environmental Justice and World Literature</td>
<td>Modhumita Roy</td>
</tr>
<tr>
<td>ENV 152</td>
<td>Seminar in Environmental Negotiations</td>
<td>Andrew Tirrell</td>
</tr>
<tr>
<td>ENV 107/GIS 101</td>
<td>Intro to Geographic Information Systems</td>
<td>Carl Zimmerman</td>
</tr>
<tr>
<td>ENV 150</td>
<td>Environment, Communication and Culture</td>
<td>Andrew Tirrell</td>
</tr>
<tr>
<td>ENV 196-R/CEE 194</td>
<td>Selected Topics: Intro to Remote Sensing</td>
<td>Elena Naumova</td>
</tr>
<tr>
<td>ENV 197/GIS 102</td>
<td>Advanced GIS</td>
<td>Carl Zimmerman</td>
</tr>
<tr>
<td>ENV 199</td>
<td>Senior Honors Thesis</td>
<td>Colin Orians</td>
</tr>
<tr>
<td>EXP 050</td>
<td>Topics in Media Literacy</td>
<td>Jesse Littlewood</td>
</tr>
<tr>
<td>EXP 101</td>
<td>Advanced Filmmaking</td>
<td>Woolf and Gittleman</td>
</tr>
<tr>
<td>FAM 064</td>
<td>Photography Foundations</td>
<td>Mandel, Gardner, Angier</td>
</tr>
<tr>
<td>FAM 065</td>
<td>Photography and Computer</td>
<td>Tom Macintyre</td>
</tr>
<tr>
<td>GER 82/ENV 82</td>
<td>Imagining the Environ: Cross-cult. persp.</td>
<td>Marcus Wilczek</td>
</tr>
<tr>
<td>PHIL 124</td>
<td>Bioethics</td>
<td>Mitchell Silver</td>
</tr>
<tr>
<td>PS 103</td>
<td>Political Science Research Methods</td>
<td>Mazaheri or Masuoka</td>
</tr>
<tr>
<td>PSY 013</td>
<td>Social Psychology</td>
<td>Jessica Remedios</td>
</tr>
<tr>
<td>PSY 031</td>
<td>Statistics for Behavioral Science</td>
<td>Lara Slobada</td>
</tr>
<tr>
<td>PSY 032</td>
<td>Experimental Psychology</td>
<td>Heather Urry</td>
</tr>
<tr>
<td>PSY 036</td>
<td>Experimental Social Psychology</td>
<td>Keith Maddox</td>
</tr>
<tr>
<td>SOC 040</td>
<td>Media and Society</td>
<td>Sarah Sobieraj</td>
</tr>
<tr>
<td>SOC 102</td>
<td>Qualitative Research Methods</td>
<td>Sarah Sobieraj</td>
</tr>
<tr>
<td>UEP 101</td>
<td>Land Use Planning</td>
<td>Jon Witten</td>
</tr>
<tr>
<td>UEP 232/ENV 193</td>
<td>Intro to GIS</td>
<td>Barbara Parmenter</td>
</tr>
</tbody>
</table>
### Track IV: Food Systems and the Environment

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Instructor</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANTH 040</td>
<td>Biological Anthropology</td>
<td>Stephen Bailey</td>
</tr>
<tr>
<td>ANTH 178</td>
<td>Animals and Posthuman Thought</td>
<td>Alex Blanchette</td>
</tr>
<tr>
<td>BIO 010/ENV 010</td>
<td>Plants and Humanity</td>
<td>George Ellmore</td>
</tr>
<tr>
<td>BIO 108</td>
<td>Plant Development</td>
<td>George Ellmore</td>
</tr>
<tr>
<td>BIO 185</td>
<td>Food for All: Ecology, Biotechnology and Sustainability.</td>
<td>Colin Orians</td>
</tr>
<tr>
<td>CD 140</td>
<td>Problems of Research: Statistics</td>
<td>Sean Parker</td>
</tr>
<tr>
<td>CD 142</td>
<td>Research Methods and Design</td>
<td>Kathleen Camara</td>
</tr>
<tr>
<td>CEE 054/ENV 054</td>
<td>Fundamental Epidemiology</td>
<td>Mark Woodin</td>
</tr>
<tr>
<td>CH 030</td>
<td>Community Health Methods</td>
<td>Staff</td>
</tr>
<tr>
<td>EC 013</td>
<td>Statistics</td>
<td>Thomas Downes</td>
</tr>
<tr>
<td>EC 030/ENV 030</td>
<td>Environmental Economics</td>
<td>Brooke Jack</td>
</tr>
<tr>
<td>EC 035</td>
<td>Economic development</td>
<td>Staff</td>
</tr>
<tr>
<td>EC 048</td>
<td>Health Economics</td>
<td>Judith Bentkover</td>
</tr>
<tr>
<td>EC 130</td>
<td>Topics in Environmental Economics</td>
<td></td>
</tr>
<tr>
<td>ENV 107/GIS 101</td>
<td>Intro to Geographic Information Systems</td>
<td>Carl Zimmerman</td>
</tr>
<tr>
<td>ENV 196-R/CEE 194</td>
<td>Selected Topics: Introduction to Remote Sensing</td>
<td>Elena Naumova</td>
</tr>
<tr>
<td>ENV 197/GIS 102</td>
<td>Advanced GIS</td>
<td>Carl Zimmerman</td>
</tr>
<tr>
<td>ENV 199</td>
<td>Senior Honors Thesis</td>
<td>Colin Orians</td>
</tr>
<tr>
<td>HIST 14</td>
<td>Historical Persp. on Contemporary Crises in Africa</td>
<td>Staff</td>
</tr>
<tr>
<td>HIST 154</td>
<td>Health and Healing in Medieval and Early Modern Europe</td>
<td>Rankin</td>
</tr>
<tr>
<td>NU 0101</td>
<td>Introductory Human Nutrition</td>
<td>Kelly Kane</td>
</tr>
<tr>
<td>NUTR 221</td>
<td>Global Food Business</td>
<td>James Tillotson</td>
</tr>
<tr>
<td>NUTR 224</td>
<td>Community Food Planning and Programs</td>
<td>Hugh Joseph</td>
</tr>
<tr>
<td>NUTR 327</td>
<td>Food systems</td>
<td>Hugh Joseph</td>
</tr>
<tr>
<td>PHIL 124</td>
<td>Bioethics</td>
<td>Mitchell Silver</td>
</tr>
<tr>
<td>PS 103</td>
<td>Political Science Research Methods</td>
<td>Mazaheri or Masuoka</td>
</tr>
<tr>
<td>PSY 031</td>
<td>Statistics for Behavioral Science</td>
<td>Lara Slobada</td>
</tr>
<tr>
<td>SOC 102</td>
<td>Qualitative Research Methods</td>
<td>Sarah Sobieraj</td>
</tr>
<tr>
<td>UEP 232/ENV 193</td>
<td>Intro to GIS</td>
<td>Barbara Parmente</td>
</tr>
</tbody>
</table>
COURSE DESCRIPTIONS

ANTH 20 GLOBAL CITIES
Cathy Stanton
MoWe 1:30PM - 2:45PM
Introductory-level urban anthropology class exploring cities as intersections of people, ideas, capital, and the physical environment. Themes include anthropological understandings of space and place-making; utopic and dystopic urban visions of the city; urban mobility; cities as nodes in global environments, economies, and networks of people and production; sensory experience and expressive culture in cities; urban “nature” (e.g., parks); difference and inequality in urban landscapes; the growth of urban populations and megacities; and tensions between the city as planned or conceptualized and the city as a lived experience.

ANTH 40 BIOLOGICAL ANTHROPOLOGY
Stephen Bailey
TuTh 4:30PM - 5:45PM
Human biological diversity and introduction to problems of biological diversity in living populations. Variation in genetic makeup: our size, shape, and color; our bodily responses to heat, cold, and workload; our neural responses to the world. Basic evolutionary principles applied to explain origins, mechanisms, and trends of human diversity. Topics (may) include the interplay of biology and culture; adaptation to environmental stresses including cold, high altitude, and megacities; co-evolution of infectious disease, including STDs, smallpox, and malaria; basic Mendelian, molecular, and population genetics; primate biology and behavior; human growth; and the selective significance of contemporary behaviors such as using social media, reshaping the natural environment, taking risks in extreme sports, and online dating that meld genetic predispositions with new cultural frames.

ANTH 042 EXTREME ENVIRONMENTS: HUMAN ADAPTABILITY TO NOVEL HABITS
Stephen Bailey
Mo 6:30PM - 9:00PM
Humans' biological, cultural, and technological adaptations to five environments that test the extremes of our ability to inhabit: subtropical deserts, the arctic, the high plateaus of central Asia and South America, megacities, and space. Biological adaptations, including short term, developmental, and evolutionary, to multifactorial stressors in those environments. Interplay of biological with cultural adaptations ranging from educational, media, and literary negotiation of the unfamiliar, through complex social behaviors such as optimizing energy expenditures, to technological solutions as basic as fire or as complex as space suits. How these cultural responses buffer natural selection, but may also introduce novel stresses. Recommendations: Anthropology 40 or an equivalent introductory college biology course recommended.

ANTH 178 ANIMALS AND POST HUMAN THOUGHT
Alex Blanchette
We 6:00PM - 9:00PM
Marshals animal rights, and other attempts to create a social contract across species lines, as a lens to examine changing forms of Western politics and consciousness about life, nature, and the idea of the human. Intensive reading of works by Haraway, Foucault, Derrida, and Latour. Topics include the concept of the animal, domestication, anthropocentrism and human exceptionalism, biopolitics, factory farming, consumption of food and clothing, experiences of life and death, genetic engineering and lively technologies, and non-human agency.
BIO 002 BIOLOGY AND THE AMERICAN SOCIAL CONTRACT
Michael Romero
MoWe 1:30PM - 2:45PM
Scientific background of such biological issues as teaching of evolution and the creationist viewpoint, risk assessment and the causes of cancer and neurodegenerative diseases, genetic engineering in medical and agricultural research, the use of animals and humans in research. Case studies of the impact of public and private interests on biological research in the United States.

BIO 010 PLANTS AND HUMANITY
George S Ellmore
TuWeFr 9:30AM - 10:20AM
(Cross-listed as ENV 10.) Principles of botany accenting economic aspects and multicultural implications of plants, their medicinal products, crop potential, and biodiversity. Emphasis placed on global aspects of this dynamic science, with selected topics on acid rain, deforestation, biotechnology, and other applications. Also covered are medicinal, poisonous, and psychoactive species, as well as nutritional sources from seaweeds and mushrooms to mangos and durians. Three lectures.

BIO 106 MICROBIOLOGY WITH LAB
Benjamin Wolfe
MoWe 1:30PM - 2:45PM or Tu 1:30PM - 4:00PM
A survey to provide a general understanding of bacteria and viruses. Bacterial structure, growth, ecology, pathogenic mechanisms, and viral life cycles. The laboratory will familiarize students with microbiological methods and various groups of microorganisms. Three lectures, one laboratory per week. One and one-half credits.
Recommendations: One intermediate biology course or equivalent, and CHEM 2.

BIO 108 PLANT DEVELOPMENT
George S Ellmore
TuTh 12:00PM - 1:15PM
(Cross-listed as ENV 108.) Structural and physiological aspects of plant development. Genetic and environmental influences on development as these pertain to germination, root and shoot growth, and plant sexuality and flowering. Information on corn, bean, and tobacco systems will be extended to diverse groups such as cacti, ferns, bromelaidas, water plants, parasitic and carnivorous plants.
Recommendations: BIO 13 and 14, or equivalent.

BIO 130 ANIMAL BEHAVIOR
Philip T.B. Starks
TuThFr 8:30AM - 9:20AM
(Cross-listed as ENV 130.) An examination of ethological theory: the development of behavior, orientation, migration, communication, and social behavior. Particular emphasis will be placed on the functioning of animal societies.
Recommendations: BIO 13 and 14, or equivalent.
BIO 133 ECOLOGICAL MODELS AND DATA
Elizabeth E. Crone
TuTh 3:00PM - 4:15PM (LEC)
Mo 1:30PM - 4:00PM (LAB)
Probability and likelihood, fitting simple models to data, and using models to make predictions. Examples come from problems in ecology, with emphasis on monitoring plant and animal populations and forecasting how these populations will respond to changing environments. Includes use of discrete probability distributions (binomial and Poisson), building mixed and compounded probability distributions, an introduction to Bayesian statistics, and use of the open-source statistics program, R. Students should have a good working knowledge of high school algebra and an interest in ecology.

BIO 164 MARINE BIOLOGY
Jan Pechenik
TuWeFr 9:30AM - 10:20AM
(Cross-listed as ENV 164.) An intermediate-level introduction to the biology of marine organisms. Following a detailed survey of major marine animal and plant groups, the course will consider aspects of biology that are particularly relevant to marine organisms: adaptation to salinity and temperature fluctuation, bioluminescence and its ecological significance, locomotory mechanics, food-chain dynamics, dispersal and substrate selection, and control of species diversity. Recommendations: BIO 13 and 14, or equivalent.
Requires completion of BIO 0013 or equivalent or BIO 0003 with a B- or better and BIO 0014 or graduate student.

BIO 180 SEMINAR IN CONSERVATION BIOLOGY
J Michael Reed
MoWe 1:30PM - 2:45PM
Advanced topics in conservation biology. Readings and discussion of the current literature emphasized. Topics will change each year; example topics are landscape ecology, dynamics and conservation of small populations, and restoration ecology. Please see departmental website for detailed semester course descriptions.
Recommendations: Upper level Group C course in Biology

BIO 185 FOOD FOR ALL: ECOLOGY, BIOTECHNOLOGY, AND SUSTAINABILITY
Colin Orians, Sara Gomez, Timothy Griffin
MoWe 4:30PM - 5:45PM
(Cross-listed as NUTR 241 and CIS 201-01 SPRING 2013). An interdisciplinary examination of the pros and cons of two divergent approaches to meeting the increasing global food demand: organic farming and genetic engineering. Contrasting crops grown in developing and industrialized countries serve as case studies to evaluate: (1) how ecological knowledge makes food production more sustainable; (2) what existing and emerging approaches can, in the face of climate change, contribute to a reliable supply of nutritious food; and (3) the political and economic drivers that shape who has access to these technologies. An important focus is developing communication skills for negotiating stakeholder-specific perspectives (growers, advocacy groups, industry, governmental agencies).
Please see departmental website for specific details.
http://provost.tufts.edu/teaching-research/university-seminar/
Recommendations: Intro Bio or Intro Chemistry or equivalent
**CD 140 PROBLEMS OF RESEARCH: STATISTICS**  
Staff  
Tu 1:20PM - 4:20PM  
Elementary statistics procedures up through and including analysis of variance. Instruction and practice in use of prepackaged computer programs useful in social science research.  
Recommendations: Senior or graduate status and background in fundamental mathematics or elementary statistics.

**CD 142 RESEARCH METHODS AND DESIGN**  
Kathleen A Camara  
We 6:00PM - 9:00PM  
Introduction to research design and field and laboratory methods relevant to child-study research. Topics will include experimental, quasi-experimental, and correlational design; measurement of behavior; data reduction; generalizability of findings; and ethical issues. Students will analyze and evaluate research studies and prepare a research proposal.  
Recommendations: Permission of instructor.

**CD 144 QUALITATIVE AND ETHNOGRAPHIC METHODS ON APPLIED SOCIAL SCIENCE RESEARCH**  
Jayanthi Mistry  
TuTh 3:00PM - 4:15PM  
An interdisciplinary overview of qualitative research methods. Focus on providing tools and strategies for practitioners and researchers in social sciences to pursue systematic inquiry in applied settings.

**CEE 032 ENVIRONMENTAL ENGINEERING PRINCIPLES**  
Kurt D. Pennell  
TuTh 1:30PM - 2:45PM  
Recommendations: ES 2, MATH 34 (formerly MATH 12), CHEM 1 or 11 or 16, and PHY 11

**CEE 054 FUNDAMENTAL EPIDEMIOLOGY**  
Mark A Woodin  
TuTh 1:30PM - 2:45PM  
(Cross-listed as CH 54 and ENV 54.) A single course which provides students an introduction to epidemiologic techniques and analyses, including such topics as incidence and prevalence, age adjustment, and other techniques appropriate for the handling of confounders, the measurement of risk through the odds ratio and relative risk, and the interpretation of epidemiologic results. The course will feature applications of epidemiologic techniques to topics appropriate for public and community health applications such as those found in infectious disease control, screening for personal risk factors, and the conducting of disease cluster evaluations.

**CEE 158 OCCUPATIONAL AND ENVIRONMENTAL HEALTH**  
David M Gute  
MoWe 3:00PM - 4:15PM  
(Cross-listed as ENV 158.) An examination of current topics in the area of occupational and environmental health, with particular emphasis on the types of materials that produce human health effects. Both clinical and epidemiologic data will be used to assess the public health importance of environmental pollutants and to evaluate the effectiveness of control strategies. Recommendations: Senior standing or consent of instructor.
CEE 173 HEALTH EFFECTS AND RISK ASSESSMENT
Anne Marie C Desmarais
MoWe 4:30PM - 5:45PM
Recommendations: CHEM 1 or 16, senior standing and consent of instructor

CEE 194 SPECIAL TOPICS: INTRO TO REMOTE SENSING
Shafiqul Islam
Mo 8:30AM - 11:30AM
Guided independent study of an approved topic at the graduate level. Credit as arranged.
Recommendations: Consent of instructor.

CEE 214 WATER RESOURCE SYSTEMS
James F Limbrunner
MoWe 6:00PM - 7:15PM
Mathematical models of water resource and environmental systems are presented in combination with optimization procedures, decision theory, and environmental applied statistics to generate an integrated approach to the planning, design, and management of complex water resources systems. Water resources systems applications are formulated as decision problems where an optimal solution is sought, yet cost, safety, environment, and technology appear as competing constraints. Applications include regional water quality management; siting treatment plants; reservoir system operations; and design, irrigation, flood control, and watershed planning.

CH 030 COMMUNITY HEALTH METHODS
Shalini Tendulkar
MoWe 1:30PM - 2:45PM
Community health frameworks used to identify community health priorities and resources, as well as to develop and evaluate sustainable interventions in collaboration with community leaders. Emphasis on community health skills including assessment strategies; finding, analyzing and presenting public health data; and identifying and critically evaluating evidence-based interventions and assessing their potential fit with identified community priorities.

CHEM 042 QUANTITATIVE ANALYSIS
Samuel P Kounaves
TuTh 1:30PM - 2:45PM (LEC)
Mo 1:20PM - 4:20PM (LAB)
MoWe 6:30PM - 9:30PM (LAB)
Introduction to the methods and scientific basis of quantitative analysis including sampling, error & statistical analyses, data treatment & presentation, basic concepts and operation of chromatographic, electroanalytical, and spectroscopic instrumentation. For chemistry and life science majors, as well as students enrolled in environmental studies and engineering. The course will provide students in chemistry or any related discipline with the necessary foundation, understanding, and basic tools for doing good science. Two lectures, two laboratories. One and one-half courses.
Requires completion of CHEM 0002 or CHEM 0012.
DR 027 PUBLIC SPEAKING
Deborah H. Cooney
MoWe 1:30PM - 2:45PM
MoWe 3:00PM - 4:15PM
Introductory course exploring the fundamentals of clear, confident, and effective communication in one-on-one and group settings. Development of tension management skills, good breathing habits, awareness of body language, and the ability to engage an audience through a series of practical exercises. Specific vocal work focuses on tone, variety of pitch, rate, volume, and articulation. Satisfies Humanities Requirement Fall 2006 and beyond.

EC 005 PRINCIPLES OF ECONOMICS
George Norman
TuTh 12:00PM - 1:15PM (LEC)
Fr 10:30AM - 11:20AM (RECIT)
Th 6:00PM - 6:50PM (RECIT)
An introduction to the fundamentals of microeconomic and macroeconomic analysis. Topics covered in microeconomics include 1) how markets determine composition and pricing of outputs and inputs, and 2) the behavior of individual consumers and businesses in response to market forces. Topics covered in macroeconomics include 1) the determinants of economic growth, and 2) the effects of fiscal and monetary policy on unemployment, inflation, and capacity utilization. EC 5 and 8 cannot both be taken for credit.

EC 008 PRINCIPLES OF ECONOMICS WITH ENVIRONMENTAL APPLICATIONS
Ujjayant Chakravorty
MoWe 4:30PM - 5:45PM
An introduction to the fundamentals of microeconomic and macroeconomic analysis. Covers the same concepts and tools as Economics 5 with a focus on environmental issues, examples and applications. Satisfies all major or minor requirements satisfied by EC 5. EC 5 and 8 may not both be taken for credit.

EC 013 STATISTICS
Joseph Swingle
TuFr 8:05AM - 9:20AM (LEC)
Th 8:30AM - 9:20AM (RECIT)
Fr 12:00PM - 12:50PM (RECIT)
An introduction to basic statistical techniques that are used in economic analysis. Major topics include probability, discrete random variables, continuous random variables, sampling distributions, estimation, and hypothesis testing. The course will conclude with some theory and applications of the linear regression model. Required of all economics majors.
Recommendations: EC 5, MATH 30 and 14 (formerly MATH 5 and 6), or MATH 32 (formerly MATH 11).

EC 030 ENVIRONMENTAL ECONOMICS
Ekaterina Gnedenko
TuTh 10:30AM - 11:45AM
(Cross-listed as ENV 30.) An examination of the uses and limitations of economic analysis in dealing with many of the environmental concerns of our society. Public policies concerning the environment will be evaluated as to their ability to meet certain economic criteria.
Recommendations: EC 5.
EC 035 ECONOMIC DEVELOPMENT
David O Dapice
MoWe 10:30AM - 11:45AM
Problems in the growth of underdeveloped economies. Emphasis on quantitative models of economic growth at low levels of income and on the testing of various hypotheses proposed to explain underdevelopment. Consequences of market structures, population growth, externalities, institutions, and political factors for economic development.
Recommendations: EC 5.

EC 048 HEALTH ECONOMICS
Judith Bentkover
Tu 10:30AM - 1:00PM
An examination of major topics in the economics of health and health care, both in the United States and abroad, using the basic theoretical and empirical tools of economics. Covers the medical and nonmedical determinants of health, markets for medical care services and health insurance, and proposed ideas for health care reform. Special topics include AIDS, aging, and obesity.
Recommendations: EC 5.

EC 107 ECONOMETRIC ANALYSIS
Jeffrey E Zabel
TuTh 12:00PM - 1:15PM (LEC)
Tu 7:00PM - 9:00PM (RECIT)
The study of multiple regression models and their applications. Focus on the properties of estimation techniques when the classical regression assumptions hold and when they do not hold. Topics include least squares estimation, instrumental variable estimation, panel data techniques, and time-series techniques. EC 15 and 107 may not both be taken for credit.
Recommendations: EC 13 or equivalent, MATH 34 (formerly MATH 12) and MATH 70 or 72 (formerly MATH 46 or 54).

EC 130 TOPICS IN ENVIRONMENTAL ECONOMICS
Brooke Kelsey Jack
Fr 9:00AM - 11:30AM
Research seminar for students who wish to pursue environmental economics beyond the level of EC 30. Topics may include the design and administration of environmental excise taxes, the theory and practice of benefit-cost analysis, the economics of renewable and exhaustible resources, and the sustainability of economic growth.
Recommendations: EC 11 and 30, or permission of instructor.

EC 132 ECONOMICS OF ENERGY MARKETS
Gilbert Metcalf
MoWe 10:30AM - 11:45AM
Analysis of energy markets and policy issues arising from our production and consumption of energy. Topics considered include the theory of depletable resources, measurement of energy externalities, market power in energy production, climate change and energy security.
EC 191-01 INTERMEDIATE SELECTED TOPICS: URBANIZATION IN THE DEVELOPING WORLD
Anna Hardman
Fr 9:00AM - 11:30AM
Lectures on intermediate topics in economics. Topics to be announced. Credit as arranged. Please see departmental website for specific details: http://ase.tufts.edu/econ/
Recommendations: EC 11, 12, or 13.

ELS 105-01 ENTREPRENEURIAL MARKETING
John Derby
We 1:20PM - 4:20PM
This course focuses on institutional and product marketing methods used by start-up to medium-sized companies. After an overview of basic marketing principles, the course will cover the spectrum from day-to-day marketing activities of the entrepreneurial business to positioning and strategy. Students will learn to analyze, formulate, and implement marketing strategies, explore concepts for understanding customer behavior and creating entrepreneurial marketing strategy, and learn the fundamentals of market research, pricing, and reaching and selling to customers.

ELS 105-02 ENTREPRENEURIAL MARKETING
Gavin Finn
Mo 6:00PM - 9:00PM
This course focuses on institutional and product marketing methods used by start-up to medium-sized companies. After an overview of basic marketing principles, the course will cover the spectrum from day-to-day marketing activities of the entrepreneurial business to positioning and strategy. Students will learn to analyze, formulate, and implement marketing strategies, explore concepts for understanding customer behavior and creating entrepreneurial marketing strategy, and learn the fundamentals of market research, pricing, and reaching and selling to customers.

ENG 160 ENVIRONMENTAL JUSTICE AND WORLD LITERATURE
Elizabeth Ammons
TuTh 12:00PM - 1:15PM
Recommendations: ENG 1, 2 REQUIRED or Fulfillment of College Writing Requirement. Recommended that the student already have taken either ENG 20, 21, 22, or 23.

ENV 95-01 SPECIAL TOPICS IN ENVIRONMENTAL STUDIES-LUNCH & LEARN SEMINAR SERIES
Andrew Tirrell
Th 12:00PM - 1:15 PM
Please see department website for specific details.

ENV 99 ENVIRONMENTAL INTERNSHIP
Colin Orians
A period of service with an organization, either public or private, concerned with environmental engineering, research, protection, modification, legislation, or education. Required of all majors in the program, internship proposals must first be approved by track adviser or director. Many academic semester and summer internships are available. Adviser-approved participation in field courses and fieldwork, both at Tufts and elsewhere, may be substituted for this requirement. No credit. Completion noted on transcript.
ENV 107 INTRODUCTION TO GEOGRAPHIC INFORMATION SYSTEMS
Staff
Tu 1:30PM-4:00PM
(Cross-listed as GIS 101). Broad foundation of Geographic Information Systems theory, capabilities, technology, and applications. Topics include GIS data discovery, data structure and management; principles of cartographic visualization; and basic spatial analysis and modeling. Assignments concentrate on applying concepts covered in lectures and class exercises to term projects in each student’s fields of interest.

ENV 150 ENVIRONMENT, COMMUNICATION AND CULTURE
Andrew R. Tirrell
Th 6:30PM – 9:00-PM
Explore the intersection of environmental issues, communication, and cultures. Examination of where our beliefs about environmental issues come from, how news and entertainment media cover environmental challenges, and why good coverage of critical issues is so rare. Exploration of green marketing and the relationship among politics, environmental issues, and the media, and discuss how media can be used by individuals and advocacy groups to effect social change.

ENV 152 SEMINAR IN ENVIRONMENTAL NEGOTIATIONS
Andrew R. Tirrell
Th 9:00AM - 11:30AM
An introduction to the history and current application of environmental negotiations in response to complex environmental challenges. Study of both the theory behind varied approaches to negotiating environmental agreements and the international and domestic systems through which such negotiations take place. Combines both traditional seminar discussions and hands-on activities such as negotiation simulations.

ENV 186 COASTAL COMMUNITIES AND MARINE RESOURCES MANAGEMENT
Andrew R. Tirrell
Th 1:30PM – 4:00PM
Introduction to marine resources management with a focus on the cultural and social ties of coastal communities to those resources. Focused on fisheries management, marine protected areas, offshore drilling, climate change adaptation, and other topics of contemporary relevance. In addition to seminar style discussions, students will be expected to complete a significant research project on a coastal community of interest. Opportunities for field research in local communities may be available.

ENV196R/CEE 194 SPECIAL TOPICS: INTRO REMOTE SENSING
Elena Naumova
MW 10:30-11:45am
This introductory course with no prerequisites deals with remote sensing sensors and their applications, the basics of image acquisition, processing and data analysis used in the field of geomatics, as well as conceptual issues involved with collecting data in the electromagnetic spectrum, storing, processing and analyzing remotely sensed datasets and images. The class focuses on learning fundamentals and designing a workflow in remote sensing to solve an environmentally based problem with real-world applications. The course is especially suitable for students exposed to Geographic Information Systems (GIS) who wish to explore collection of environmental data and imagery from remote platforms and explore the basics of visual interpretation, digital analysis and application of remote sensing in industry and academia.
ENV 197 ADVANCED GIS
Glenn Hazelton
Th 6:30PM - 9:00PM
(Cross-listed as GIS 102). Design and use of spatial information systems to support analytical modeling in research and practice. Topics include the structure and integration of large data sets, relational database management, development of spatial data, integration of data into models and geoprocessing techniques, and basic scripting to support geospatial modeling.
Recommendations: GIS (CIS) 101 or equivalent.

ENV 199 SENIOR HONORS THESIS
Colin Orians
See Thesis Honors Program for details. Please see department website for specific details.

EOS 002 ENVIRONMENTAL GEOLOGY WITH LAB
John C Ridge
TuWeFr 9:30AM - 10:20AM (LEC)
MoWeFr 10:30AM - 11:20AM (LEC)
Mo or Tu or We 1:20PM - 4:20PM (LAB)
(Formerly GEO 2). Geologic processes at the earth’s surface. Groundwater, the development of erosional and depositional landforms, glaciation and climate, and sea level change. Modern geologic environments as analogs for past environments and climate. Geologic processes and humans. Field trips illustrating glacial and coastal environments. Three lectures, one field trip or laboratory. Spring

EOS 052 PALEOCLIMATE
Andrew Kemp
TuWeFr 9:30AM - 10:20AM
Examination of climate changes that took place on Earth during the last ~4 billion years with a focus on the proxy evidence for those changes and understanding of the mechanisms that caused them. This journey begins with the wrongly perceived “hell” of the Hadean and ends with Quaternary glaciations, the Holocene, the “Hockey Stick,” and a glimpse into the near future. Prerequisite: EOS 2, 5 or 51. May be taken by grad students as EOS 152 with extra assignments.

EOS 104 GEOLOGICAL APPLICATIONS OF GIS
Jacob S. Benner
Mo 3:00PM - 4:15PM
(Formerly GEO 104). Basic Geographic Information Systems (GIS) theory and application in the geological sciences. A series of self-directed tutorials in basic GIS skills complemented by a weekly lecture and geological extension exercise. A final independent project focused on a geological application of GIS will reinforce and extend basic skills. Final project to be presented in lieu of final exam. One half course credit.
Recommendations: EOS 1 and 2 (formerly GEO 1 and 2), and permission of the instructor.

ES 027 PUBLIC HEALTH ENGINEERING
Daniele Susan Lantagne
MoWe 1:30PM - 2:45PM
(Cross-listed as ENV 0027). An introduction to public health engineering. Elements of waterborne disease control, hazardous materials management, occupational health and safety, and environmental interventions. Applications to environmental engineering and environmental engineering science.
ES 056 PROBABILITY AND STATISTICS  
Wayne A Chudyk  
Th 3:00PM - 3:50PM  
Fr 10:30AM - 11:20AM  
MoWe 10:30AM - 11:45AM  
Application of the concepts of probability and statistics to problem solving in engineering systems. Topics include data reduction techniques, probability, probability distribution functions, error propagation, sampling distributions, estimation, hypothesis testing, simple comparative experiments, and linear regression. Examples are drawn from a variety of disciplines, including the environment, materials, manufacturing, computing, and process design.  
Recommendations: MATH 42 (formerly MATH 13)

EXP 050 TOPICS IN MEDIA LITERACY  
Jesse Littlewood  
Mo 6:00PM-8:30PM  
In a media-saturated world, endless possibilities exist for what we can watch, read, listen to, and create. Yet all too often the flood of images overwhelms us, paralyzes us, and shapes our perceptions of ourselves, others and the world. This class will focus on how we can deconstruct these images in order to use the media for positive social change, and avoid being used by it. We will examine media stereotypes of gender, ethnicity, race, and class, explore the role of the “citizen journalist,” discuss the ways new media has changed the traditional media landscape, and think about the impact of media convergence and the ethical issues that arise when only a few corporations own the majority of news, entertainment, publishing, and internet outlets. Finally, by examining scholarly research, film clips, TV news and hearing guest speakers, we will focus on the importance of media literacy in our everyday lives, and how to use the media to become an active citizen.

EXP 101 ADVANCED FILMMAKING  
Howard Woolf  
Arranged Times  
Based on a directed study model, this course provides the means by which students who have completed EXP-0056-CS: Making Movies – or who are able to demonstrate equivalent competence - can continue their training as filmmakers. Students who initially qualify will present a business plan for their project and, if accepted, will receive credit, access to Tufts Film Works’ production and editing equipment, and a supervised context within which to work. In return, they agree to watch a negotiated number of source films, keep a Producer’s Log and write a final assessment, taking into account both the process they went through to produce their film and their reaction to the film once it’s done.  
Please note: Enrollment is by consent only. For information on eligibility and registration, contact Howard Woolf, howard.woolf@tufts.edu, x73384.

FAM 064 PHOTOGRAPHY FOUNDATIONS  
Roswell Angier, MoWe 1:30PM - 4:30PM  
Dore Gardner, TuTh 1:30PM - 4:30PM  
Mike Mandel, TuTh 7:00PM - 10:00PM  
These foundation courses will cover fundamental aspects of photography as a means of personal expression: craft, seeing/perception, design, critiquing, history and hard work. The acquisition of basic skills in the craft of photography necessary to make technically good black and white prints will be emphasized along with the development of a photographic aesthetic. Critiques will be held to assist students in judging their work. The course will also give basic historical information to provide a context in which the students will be working. Students will be introduced to electronic imaging if time permits. Students must have a manually adjustable (non-automatic) 35mm camera with a 50mm lens and provide film and printing paper. The school will provide chemicals and darkroom facilities. Approximate cost of supplies will be $150. Three to six hours per week of lab time outside of class will be required.
FAM 065 PHOTOGRAPHY AND COMPUTER
Thomas Michael MacIntyre
TuTh 4:00PM - 6:45PM
This course is an introduction to the techniques of electronic imaging as they relate to the practice of photography. Students will learn the basics of digitizing, image editing, and manipulation with Adobe Photoshop. In addition to regular assignments and critiques, there will be frequent class discussions of critical and historical issues raised by the introduction of the computer into the practice of photography. Some familiarity with computers is desirable, but not absolutely necessary.

GER 82/ENV 82 IMAGINING THE ENVIRONMENT: CROSS-CULTURAL PERSPECTIVES
Markus Wilczek
MoWe 4:30 PM - 5:45PM
Compares and contrasts representations of the environment in German culture — commonly understood to be particularly “Green”— with other European and Non-European cultures. Focuses on how themes such as sustainability, the toxic discourse, wilderness, biodiversity, nationalism, postcolonial heritage, and the global risk society are negotiated in literature, film, and music. May be taken at the 100 level. In English.

HIST 0014-06 HISTORICAL PERSPECTIVE ON CONTEMPORARY CRISES IN AFRICA SINCE 1850
Staff
MoWe 1:30PM - 2:45PM
African history and culture from the nineteenth century to the present, relating environmental, technical, and social innovations and constraints to change through time. Themes include intensified contact between Africans and Europeans, conquest, colonial experiences, African strategies to reclaim authority and the developing role of women and youth in shaping production, investment, and social choices in contemporary Africa.

HIST 154 HEALTH AND HEALING IN MEDIEVAL AND EARLY MODERN EUROPE
Alisha Rankin
TuTh 3:00PM - 4:15PM
Medicine in Western Europe from approximately 1100-1700. Key intellectual, social, and cultural themes and trends in pre-modern medicine. Major topics include the development of university medicine from its Greek and Arabic roots through the theoretical upheavals of the sixteenth and seventeenth centuries; medical practice, particularly the diverse types of healers and their relationship with patients; epidemic disease such as plague and syphilis and early public health measures formed in response; the development of hospitals and other medical institutions. Overlapping naturalistic, religious, and magical approaches to disease and healing.

MATH 021 INTRODUCTORY STATISTICS
Patricia M. Garmirian
MoWe 10:30AM - 11:45AM
MoWe 1:30PM - 2:45PM
Descriptive data analysis, sampling and experimentation, basic probability rules, binomial and normal distributions, estimation, regression analysis, one and two sample hypothesis tests for means and proportions. The course may also include contingency table analysis, and nonparametric estimation. Applications from a wide range of disciplines.
Recommendations: High school algebra and geometry.
NU 0101 Introductory Human Nutrition
Kelly Kane
TuTh 8:05AM - 9:20AM
To provide an understanding of basic nutrition science to non-science majors and students with a limited scientific background. Students will become familiar with: the principles of diet planning, government standards, and food labeling; the biological functions and food sources of each nutrient; energy balance, weight management, and physical activity; the role of nutrition in chronic disease development; nutrition throughout the life cycle; food safety issues; and current nutrition-related controversies. This course meets the science requirement for undergraduate non-science majors. It is not acceptable for biology credit for biology majors.

NUTR 221 Global Food Business
James Tillotson
TuTh 11:00am-12:30 pm
The purpose of this course is to introduce the student to the field of international food and agribusiness. Today, international trade in agricultural commodities and foods is a major segment of the world's business. This business continues to grow yearly, motivated by new and potential international trade agreements (GATT, NAFTA), expansion by both established and new multinational companies, and export policies by countries seeking new markets for their growing food and agricultural production. The focus of this course will be to develop in each student a conceptual knowledge of the analytical skills in administration, marketing, business strategy, research, governmental policies and technology that international food business requires today. The course also attempts to analyze the global food business from a transnational perspective, rather than any single nationalistic viewpoint of food and agribusiness. It is designed to meet the requirements of students aiming to enter the international food business world, as well as for students who in their professional careers (e.g., government, legal) will deal with this important sector of international business.

NUTR 224 Community Food Planning and Programs
Hugh Joseph
We 3:15 PM- 6:15PM
Key features of the course include field trips to community / local food and farm programs, guest presenters, and field-based planning projects with area non-profits, public sector agencies, or businesses.
This course will cover (domestic) food and agriculture programs that focus on or operate at the community or regional levels. Such initiatives promote local/regional agriculture and food chain businesses that process, market, and use local or regional food products. In tandem, public sector and NGO initiatives now sponsor programs and policies with a community or urban food system agenda. The focus will be on more complex initiatives such as farm-to-institution projects, regional wholesaling initiatives, and food policy councils.
A major course objective is to provide practical skills and tools for design, strategic planning, and implementation of these programs, including assessments, research, policy components, and funding. We will also provide contextual analyses and critical perspectives of community-based strategies as alternative food systems models.

NUTR 231 Fundamentals of GIS
Paul Cote
Fr 9:00AM – 12:00 PM
Many problems in agriculture, food and nutrition are inherently geographic in nature. For example, livestock production is increasingly concentrated in large feeding operations, leading to new spatial patterns of water and air pollution or foodborne illness. Spatial clustering is equally important for food consumption, nutrition and public health, as in hunger hotspots, food deserts and disease corridors. This course will equip students with the skills needed to capture, analyze and communicate spatial data in geographic information systems (GIS), using a variety of examples from agriculture, food and nutrition.
NUTR 233 AGRICULTURAL SCIENCE AND POLITICS I
Christian Peters
Timothy Griffin
TuTh 10:30AM – 12:00PM
First part of a two-semester sequence required of AFE students. This course covers the major biological, chemical and physical components of agricultural systems. Each is discussed from the viewpoints of both the underlying natural processes and principles, and their significance for major agricultural, food safety, and environmental policy issues in the US today. In the first semester, the topics covered are soils, water, nutrients, and genetic resources.

NUTR 327
Hugh Joseph
We 9:00AM - 12:00PM
Food Systems represents a form of capstone course with a discussion format. Students will provide input into selection of topics that they will focus and present on. The course primarily addresses food system structures and components, with an emphasis on sustainability spanning agriculture, environment, power and economics, values and ethics, food security, food sovereignty, and food choices. Topics of concentration may cover contemporary issues and can include food miles and ‘foodprints’; climate change; greening vs. greenwashing; ethics of eating meat and using bottled water; and eating sustainably. We will also examine the global political economy of the food system, and approaches to understanding and influencing food system change. Common terminology used in food systems and sustainability discourses are clarified. Classes will emphasize student presentations on components of the food system; student-led discussions of readings; and group exercises/debates. Assignments will include research-based projects focusing on food system change. This class is suitable for second year students, or for first year students with grounding in food systems literature and/or relevant experience (to be approved by the instructor).

PHIL 033 LOGIC
Susan Russinoff
TuThFr 12:00PM - 12:50PM
Cross-listed as (LING 33). An introduction to fundamental concepts of modern formal logic, including sentence logic, quantification theory, and identity. Emphasis on the application of formal methods to reasoning in philosophy, mathematics, and everyday affairs. Please note: only one of PHIL, LING 33 and 103 may be taken for credit.

PHIL 0024 - Introduction To Ethics
MoWe 10:30AM - 11:45AM
Th 10:30AM - 11:20AM (REC)
An introduction to moral judgment--and the reasoning it is based on--by a detailed study of current issues such as abortion, vegetarianism, and responsibility for war crimes, and the application to such problems of ethical theories, such as egoism, utilitarianism, and the doctrine of rights.

PHIL 124 BIOETHICS
Valentina Maria Urbanek
Tu 6:30PM - 9:00PM
A survey of major ethical problems of interest to the public and the medical profession, including life-and-death issues (abortion, euthanasia) as well as issues raised by medical research and technology (organ transplants, cloning, genetic engineering, psychosurgery, human experimentation) and the delivery of health services. The implications of ethical theories for the particular problem issues. Spring. Recommendations: Junior standing.
PHY 043 ELECTRICITY AND MAGNETISM II
Austin Napier
TuTh 3:00PM - 4:15PM
The laws of induction, the Maxwell equations, electromagnetic potentials, electromagnetic waves, resonant cavities, transmission lines, wave guides and waves in a dielectric; electromagnetic radiation. With two microwave experiments.
Recommended: PHY 42 and MATH 51 (formerly MATH 38), or permission of instructor.

PS 103 POLITICAL SCIENCE RESEARCH METHODS
Natalie Masuoka
MoWe 4:30PM - 5:45PM
The study of quantitative methods for investigating political issues and policy controversies. Focuses on collecting, analyzing, and presenting data. Emphasizes hands-on training that provides useful skills for academic and professional settings. Topics covered include: measurement, hypothesis development, survey design, experiments, content analysis, significance tests, correlation, and regression. No prior statistics background necessary. Coursework includes problem sets and a final team project.
Recommendations: PS 11, 21, 45, 46, or 61. A methodologically focused course.

PS 188-03 GENDER ISSUES IN WORLD POLITICS
Richard Eichenberg
MoWe 3-4:15PM
This course is a survey of many issues relating to gender in world politics, with a particular emphasis on: gender differences in political attitudes and behavior generally; gender differences in attitudes toward war and national security in particular; the cross-cultural uniformity (or lack thereof) in gender differences in attitudes and political behavior, particularly in relation to national security and war; the role of gender differences in war, in particular how gender roles are created and the effect of war on men and women; violence against women; and the role of gender in world affairs more generally and specifically the role of gender in economic development, environmental sustainability and gender mainstreaming within international institutions.

PSY 013 SOCIAL PSYCHOLOGY
Samuel Sommers
MoWe 1:30PM - 2:45PM
How situations and the people around us influence our thoughts, feelings, and behavior. Aggression, attitudes, attraction, attribution, conformity, group processes, helping behavior, non-verbal behavior, self-knowledge, social cognition, social influence, and stereotypes and prejudice. Applications of social psychological concepts to topics such as health, intergroup relations, and law.
Recommendations: PSY 1 or junior or senior standing.

PSY 031 STATISTICS FOR BEHAVIORAL SCIENCE
Lara N Sloboda
MoWe 10:30AM - 11:45AM (LEC)
We 1:30PM - 4:00PM (LAB)
Th 9:00AM - 11:30AM (LAB)
Statistical methods for the treatment of data in the behavioral sciences. Descriptive and inferential methods will be considered. Computers will be used to explore conceptual issues and analyze data. One laboratory period in addition to lectures.
Requires completion of PSY 0001 or PSY 0009 or CD 0001 or equivalent.
PSY 032 EXPERIMENTAL PSYCHOLOGY
Heather L. Urry
MoWe 10:30AM - 11:45AM (LEC)
Mo 6:30PM - 9:00PM (LAB)
Tu 9:00AM - 11:30AM (LAB)
A laboratory based on individual and group experiments designed to familiarize students with research methods in psychological investigations. Required for psychology majors. Lectures and one laboratory period.
Requires completion of PSY 0031 or BIO 0132 or EC 0013 or MATH 162.

PSY 036 EXPERIMENTAL SOCIAL PSYCHOLOGY
Mindi Rock
We 6:30PM - 9:00PM
Laboratory and field approaches to the experimental study of social behavior. Attention will be directed to both classical research and recent innovation in social psychology. Lectures and laboratory.
Requires completion of PSY 0013 and PSY 0032.

SOC 040 MEDIA & SOCIETY
Sarah Sobieraj
MoWe 3:00PM - 4:15PM
Social and economic organization of the mass media of communication. Effects on content. Themes of mass culture. Social composition of the audience. Effects of the media on the audience. Topics such as television, films, the press, books, magazines, and advertising.

SOC 102 QUALITATIVE RESEARCH METHODS
Sarah Sobieraj
We 4:30PM - 7:00PM
Epistemological foundations of qualitative methods and related ethical issues. Development and carrying out of a research project, including formulation of a researchable sociological question, review of sociological literature, identification of a research site, conduct of systematic observations, taking and coding of field notes, qualitative interviews, analysis of data, drawing of conclusions, and development of a sociological argument.
Recommendations: At least one Sociology course or permission of instructor.

SOC 113 URBAN SOCIOLOGY
Orly Clerge
TuTh 10:30AM - 11:45AM
Sociology Cities as global phenomena, studied with classic texts on U.S. urban social life and transnational comparisons. Analysis of economic globalization, redevelopment, and landscape formation in cities. Case studies of local politics and planning, socioeconomic inequality, urban cultural change, and citizenship struggles.
Recommendations: SOC 1 or 10 or consent.

UEP 094 ENVIRONMENTAL POLICY, PLANNING, AND POLITICS
Robert H Russell
Th 1:30PM - 4:00PM
(Cross-listed as ENV 94.) Open only to undergraduates, course introduces students to the concepts and techniques central to environmental policy, including the important roles played by politics and planning. Serves as a foundation for further work in Environmental Studies or as a broad overview of the issues key in the field. Structured around four varied case studies involving simulated environmental conflicts, each culminating in a “policy forum” consisting of presentations by student teams who represent specific interests (e.g., environmental advocates, legislators, agencies and corporations). Course also features guest presentations by other faculty from the graduate Department of Urban and Environmental policy and Planning.
UEP 101 Land Use Planning  
Jon Witten  
Mo 1:30PM - 4:00PM  
Overview of land use planning methods, growth dynamics, and land development controls. Comparison of different approaches to land use planning and decision making. Impact of recent environmental legislation on land use. Techniques of mapping, site analysis, subdivision regulation, development controls, and fiscal incentives.

UEP 201 Land Use Planning  
Jon Witten  
(Cross-listed as CEE 201 and ENV 201.) Overview of land use planning methods, growth dynamics, and land development controls. Comparison of different approaches to land use planning and decision making. Impact of recent environmental legislation on land use. Techniques of mapping, site analysis, subdivision regulation, development controls, and fiscal incentives.  
Recommendations: Consent of instructor.

UEP 206-01 PLANNING FOR LOW IMPACT DEVELOPMENT AND GREEN INFRASTRUCTURE  
Scott W Horsley  
Fr 9:00AM - 11:30AM  
The course is designed to present a comprehensive approach to site planning and development that incorporates low-impact development approaches and techniques. Also known as green infrastructure, low-impact development is a conservation-based site planning and design process that sets aside critical open space buffers, reduces impervious surfaces and concentrates development into appropriate “building envelopes”. It also includes a broad range of best management practices including green roofs, bioretention, rain gardens, vegetated swales, constructed wetlands, infiltration systems and alternative wastewater management systems.

UEP 221 CLIMATE CHANGE POLICY, PLANNING, AND ACTION  
Ann Barclay Rappaport  
Tu 1:30PM - 4:00PM  
Examination of climate change problem from perspective of scientific evidence, policy responses and media coverage. Sources of greenhouse gas emissions and a wide range of mitigation and adaptation measures are explored and assessed. Overview of climate change solutions being taken or planned by governments, communities, and institutions (both for profit and non-profit) and for major systems, e.g. transportation, buildings, and energy.

UEP 230 NEGOTIATION, MEDIATION, AND CONFLICT RESOLUTION  
Robert Burdick  
Th 6:00PM - 9:00PM  
Techniques of negotiation and mediation applied to a broad range of conflict situations from interpersonal differences to labor relations, environmental disputes, and international relations. Combines practice in basic methods with theoretical and applied aspects of conflict resolution.

UEP 232 INTRO TO GIS  
Barbara M Parmenter  
TuTh 12:00PM - 1:15PM  
Broad foundation of GIS theory, capabilities, technology, and applications. Topics include GIS data structure and management, geodesy and map projections, and various techniques for raster and vector spatial data analysis. Laboratory exercises concentrate on applying concepts presented in the lectures using Idrisi and ArcGIS.
UEP 281 TOXIC CHEMICALS & HUMAN ECOLOGY
Sheldon Krimsky
We 1:30PM - 4:00PM
(Cross-listed as ENV 281.) Focuses on environmental endocrine disruptors, chemicals that mimic or interfere with the hormones of humans and wildlife. Investigates various aspects of the “environmental endocrine hypothesis,” including the scientific evidence for health effects, policy response to the claims that chemicals are interfering with the reproductive health of wildlife and humans, international perspectives, and the role of the hypothesis in environmental advocacy movements.

UEP 284 DEVELOPING SUSTAINABLE COMMUNITIES
Julian Agyeman
Th 1:30PM - 4:00PM
(Cross-listed as ENV 284.) Explores the many challenges of achieving sustainable development at local, regional, national and international levels. Focuses on improving the quality of people's lives, on disinvested communities, and on the inequitable distribution of income, wealth, and environmental hazards. Investigates the theory of sustainable development, as well as the tools, strategies, and the contexts needed to move towards the ecological integrity, economic security, empowerment, responsibility, and social well-being characteristic of sustainable communities. Case studies drawn from the U.S. and overseas.