Environmental Science, Policy and Management

Overview

The mission of the Department of Environmental Science, Policy, and Management (ESPM) is to bring a diverse research, teaching, and extension capacity to bear on environmental problems from local to global scales. The biological, physical, and social scientists of the department are organized into three divisions on the basis of similar disciplinary or topical research interests, but all work within the unifying framework of the analysis of environmental problems and the development of management strategies to address them. Environmental problems demand increased understanding of social, physical, and biological systems as well as the transfer of basic research findings through modeling, implementation, teaching, and extension. ESPM facilitates the cross-disciplinary collaboration necessary to address vital, contemporary questions.

The department includes three divisions: Ecosystem Sciences, Organisms and Environment, and Society and Environment. The faculty have expertise in diverse areas of critical importance to environmental issues. Excellence in research and teaching in many disciplines, all brought together to focus on environmental problems, offers students the opportunity to become leaders in research, conservation, restoration, and management of the environment, biodiversity, and natural resources.

Facilities

The Department of Environmental Science, Policy, and Management is spread among Giannini Hall, Mulford Hall, Hilgard Hall, the Valley Life Sciences Building, and Wellman Hall. In addition to laboratories and classrooms, the facilities include outstanding libraries and collections: the Bioscience and Natural Resource Library has some of the world's largest collections of books and periodicals on forestry, entomology, and natural resources, and extensive periodical collections in plant pathology and soils. ESPM also houses specialized laboratories for remote sensing and photogrammetry, tree physiology, pesticide chemistry, plant pathology, natural products chemistry and physiology, and ecology and wildlife biology, as well as well-equipped chemical and microbiological laboratories. There are also extensive herbaria, wildlife specimen collections, an entomological museum, insectary buildings, growth chambers, bioclimatic chambers, and greenhouses at the nearby Oxford Research Unit and at the Division of Biological Control on the Gill Tract near Albany.

Computer facilities include microcomputer laboratories and terminal rooms. ESPM manages field facilities at the 3,000-acre Blodgett Forest near Georgetown, Whitaker's Forest adjacent to Sequoia National Park, the Howard Forest near Willits, Russell Reservation near Lafayette, and the Baker Forest adjacent to the department's Summer Camp property. Berkeley's location also provides easy access to numerous public and private resource management and conservation agencies including the US Forest Service, the US Fish and Wildlife Service, the US National Park Service, the California Department of Forestry and Fire Protection, and the California Department of Fish and Game.

Summer Field Program (Undergraduate)

In the beautiful mountains of the Plumas National Forest, the UC Summer Field Camp provides students a unique opportunity to study the biota, soils, and geology of the Feather River Country. Tall ponderosa and sugar pines tower over the area, with white fir, Douglas fir, incense cedar, and black oak intermixed in the dense forests. Several streams pass through the camp. Housing is provided in cabins and bunkhouses, with a central kitchen and dining facility and a large campfire area in front. Residents enjoy easy hiking to waterfalls, lakes, and mountain meadows.

The courses of the summer field program cover wildland ecology as well as forest, range, and wildlife management; forest resource inventory; forest products; harvesting practices; and many other subjects. During the eight-week program students acquire a broad working knowledge of the concepts and techniques that wildland resource managers use in their work. Your experiences studying forestry and wildland resources in a field setting will enrich your further academic studies at Berkeley. The courses are an integral part of the core curriculum in the forestry and natural resources major, but students of any major on the Berkeley campus are welcome to apply.

For further information on this program, please see the department's website (http://nature.berkeley.edu/espm_oldsite/summercamp) .

Undergraduate Programs

Conservation and Resource Studies (http://guide.berkeley.edu/archive/2014-15/undergraduate/degree-programs/conservation-resource-studies) : BS
Environmental Sciences (http://guide.berkeley.edu/archive/2014-15/undergraduate/degree-programs/environmental-sciences/#abouttheprogramtext) : BS
Forestry and Natural Resources (http://guide.berkeley.edu/archive/2014-15/undergraduate/degree-programs/forestry-natural-resources) : BS
Molecular Environmental Biology (http://guide.berkeley.edu/archive/2014-15/undergraduate/degree-programs/molecular-environmental-biology) : BS
Society and Environment (http://guide.berkeley.edu/archive/2014-15/undergraduate/degree-programs/society-environment) : BS
Conservation and Resource Studies (http://guide.berkeley.edu/archive/2014-15/undergraduate/degree-programs/conservation-resource-studies) : Minor
Forestry and Natural Resources (http://guide.berkeley.edu/archive/2014-15/undergraduate/degree-programs/forestry-natural-resources) : Minor

Graduate Programs

Environmental Science, Policy, and Management (http://guide.berkeley.edu/archive/2014-15/graduate/degree-programs/environmental-science-policy-management) : PhD
Forestry (http://guide.berkeley.edu/archive/2014-15/graduate/degree-programs/forestry) : Master of Forestry (MF)
Range Management (http://guide.berkeley.edu/archive/2014-15/graduate/degree-programs/range-management) : MS

Environmental Science, Policy and Management

ESPM 2 The Biosphere 3 Units
An introduction to the unifying principles and fundamental concepts underlying our scientific understanding of the biosphere. Topics covered include the physical life support system on earth; nutrient cycles and factors regulating the chemical composition of water, air, and soil; the architecture and physiology of life; population biology and community ecology; human dependence on the biosphere; and the magnitude and consequences of human interventions in the biosphere.
Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 1 hour of discussion per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

ESPM 6 Environmental Biology 3 Units
Basic biological and ecological principles discussed in relation to environmental disruptions. Human interactions with the environment; their meaning for animals and plants. Discussion of basic ecological processes as a basis for understanding environmental problems and formulating strategies for their solution.
Rules & Requirements

Prerequisites: One course in introductory college biology is recommended. Intended for nonscience majors

Hours & Format

Fall and/or spring: 15 weeks - 2 hours of lecture and 1 hour of discussion per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructor: Chapela

ESPM 9 Environmental Science Case Study Seminar 3 Units
Utilizing a field intensive seminar format, the course will introduce lower division students to the process of addressing real environmental problems. Through a progression of case studies, students will explore a spectrum of research design and implementation approaches. By the end of the semester, they will be able to frame a researchable question, design a protocol for gathering relevant information, analyze the information, and derive an objective conclusion. Throughout the semester, students will present case study results in oral and written form.
Hours & Format

Fall and/or spring: 15 weeks - 3 hours of seminar per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructors: Fairfax, Spencer

ESPM C10 Environmental Issues 4 Units
Relationship between human society and the natural environment; case studies of ecosystem maintenance and disruption. Issues of economic development, population, energy, resources, technology, and alternative systems.
Rules & Requirements

Credit Restrictions: Students will receive no credit for C10 after taking 10.

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 1.5 hours of discussion per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructor: Welter

Also listed as: L & S C30V

ESPM C11 Americans and the Global Forest 4 Units
This course challenges students to think about how individual and American consumer decisions affect forest ecosystems around the world. A survey course that highlights the consequences of different ways of thinking about the forest as a global ecosystem and as a source of goods like trees, water, wildlife, food, jobs, and services. The scientific tools and concepts that have guided management of the forest for the last 100 years, and the laws, rules, and informal institutions that have shaped use of the forests, are analyzed.
Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 1 hour of discussion per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Also listed as: L & S C30U

ESPM C12 Introduction to Environmental Studies 4 Units
This integrative course, taught by a humanities professor and a science professor, surveys current global environmental issues; introduces the basic intellectual tools of environmental science; investigates ways the human relationship to nature has been imagined in literary and philosophical traditions; and examines how tools of scientific and literary analysis; scientific method, and imaginative thinking can clarify what is at stake in environmental issues and ecological citizenship.
Rules & Requirements

Credit Restrictions: Students will not receive credit for C12 after taking UGIS C12 or EnglWill count toward ESPM Social Science core requirement for the Conservish C77. ation and Resource studies major.

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 1.5 hours of discussion per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Also listed as: ENGLISH C77

ESPM 15 Introduction to Environmental Sciences 3 Units
Introduction to the science underlying biological and physical environmental problems, including water and air quality, global change, energy, ecosystem services, introduced and endangered species, water supply, solid waste, human population, and interaction of technical, social, and political approaches to environmental management.
Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 1 hour of discussion per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructors: Firestone, Goldstein, Potts

Formerly known as: Environmental Sciences 10

ESPM 24 Freshman Seminar 1 Unit
The Freshman Seminar Program has been designed to provide new students with the opportunity to explore an intellectual topic with a faculty member in a small-seminar setting. Freshman Seminars are offered in all campus departments, and topics may vary from department to department and semester to semester. Enrollment limited to fifteen freshman.
Rules & Requirements

Repeat rules: Course may be repeated for credit as topic varies. Course may be repeated for credit when topic changes.

Hours & Format

Fall and/or spring: 15 weeks - 1 hour of seminar per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: The grading option will be decided by the instructor when the class is offered. Final exam required.

ESPM 39E Freshman/Sophomore Seminar 1 - 3 Units
Freshman and sophomore seminars offer lower division students the opportunity to explore an intellectual topic with a faculty member and a group of peers in a small-seminar setting. These seminars are offered in all campus departments; topics vary from department to department and from semester to semester.
Rules & Requirements

Prerequisites: Priority given to freshmen and sophomores

Repeat rules: Course may be repeated for credit when topic changes.

Hours & Format

Fall and/or spring: 15 weeks - 2-4 hours of seminar per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: The grading option will be decided by the instructor when the class is offered. Final exam required.

ESPM 40 Insects and Human Society 2 Units
An introduction to the diversity and natural history of insects in natural and human environments. The course examines the wonder of insects, their interactions with the living world, and their contributions to and impacts on human society.
Hours & Format

Fall and/or spring: 15 weeks - 2 hours of lecture per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructor: Will

ESPM 42 Natural History of Insects 2 Units
An outline of the main facts and principles of biology as illustrated by insects, with special emphasis on their relations to plants and animals, including humans.
Hours & Format

Fall and/or spring: 15 weeks - 2 hours of lecture per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructors: Gillespie, Roderick

ESPM 44 Biological Control 2 Units
Regulation of populations of organisms, especially insects, through interactions with parasites, predators, pathogens, competitors. Discussion of examples from agricultural, forest, urban, and recreational environments.
Hours & Format

Fall and/or spring: 15 weeks - 2 hours of lecture per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructor: Mills

ESPM C46 Climate Change and the Future of California 4 Units
Introduction to California geography, environment, and society, past and future climates, and the potential impacts of 21st-century climate change on ecosystems and human well-being. Topics include fundamentals of climate science and the carbon cycle; relationships between human and natural systems, including water supplies, agriculture, public health, and biodiversity; and the science, law, and politics of possible solutions that can reduce the magnitude and impacts of climate change.
Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 1 hour of discussion per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructors: Ackerly, Sedlak, Silver, Weissman

Also listed as: L & S C46

ESPM 50AC Introduction to Culture and Natural Resource Management 4 Units
An introduction to how culture affects the way we use and manage fire, wildland and urban forests, rangelands, parks and preserves, and croplands in America. The basic concepts and tools for evaluating the role of culture in resource use and management are introduced and used to examine the experience of American cultural groups in the development and management of western natural resources.
Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 1 hour of discussion per week

Summer:
6 weeks - 7.5 hours of lecture and 2.5 hours of discussion per week
8 weeks - 6 hours of lecture and 2 hours of discussion per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Formerly known as: 50

ESPM 60 Environmental Policy, Administration, and Law 4 Units
Introduction to U.S. environmental policy process focuses on history and evolution of political institutions, importance of property, federal and state roles in decision making, and challenges of environmental policy. Emphasis is on use of science in decision making, choices between regulations and incentives, and role of bureaucracy in resource policy. Case studies on natural resource management, risk management, environmental regulation, and environmental justice.
Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 1 hour of discussion per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

ESPM 72 Introduction to Geographic Information Systems 3 Units
Introduction to computer systems, data processing software for natural resources studies. Components of geographic information systems; concepts of surveying, mapping, and remote sensing as data sources; various methods of data processing and analysis including classification, map overlay, buffer analysis, topographic modeling, spatial interpolation, and map design with a GIS. Intensive hands-on practices with relevant computer software packages.
Rules & Requirements

Prerequisites: Three years of high school math

Hours & Format

Fall and/or spring: 15 weeks - 2 hours of lecture and 3 hours of laboratory per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructor: Gong

ESPM 78A Teaching and Learning Environmental Science 4 Units
Introduces theories of cognitive development and the practices of curriculum design and lesson presentation for environmental education. Ecology and natural resource management provide the context of curriculum development. Students create lesson plans integrating core concepts and their knowledge of local environmental issues. Lessons are presented to Bay Area K-12 students in field and classroom settings.
Rules & Requirements

Prerequisites: Consent of instructor

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture, 1 hour of discussion, and 3 hours of fieldwork per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam not required.

Instructor: Spencer

ESPM 90 Introduction to Conservation and Resource Studies Major 2 Units
Introduction to the major, emphasizing each student's educational goals. Overview of ecological problems and contrasting approaches to solutions through institutional and community-based efforts. Required of all CRS sophomore majors and all entering off-campus transfer students to CRS major. Restricted to CRS majors. One field trip is normally required.
Hours & Format

Fall and/or spring: 6 weeks - 2 hours of lecture per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam not required.

ESPM 98 Directed Group Study in ESPM 1 - 3 Units
Study of special topics that are not covered in depth in regular courses in the department.
Rules & Requirements

Prerequisites: Lower division standing; consent of instructor, adviser, and department chair

Repeat rules: Course may be repeated for credit. Course may be repeated for credit when topic changes.

Hours & Format

Fall and/or spring: 15 weeks - 1-3 hours of directed group study per week

Summer:
6 weeks - 2.5-7.5 hours of directed group study per week
8 weeks - 1.5-5.5 hours of directed group study per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Offered for pass/not pass grade only. Final exam not required.

ESPM 98BC Berkeley Connect 1 Unit
Berkeley Connect is a mentoring program, offered through various academic departments, that helps students build intellectual community. Over the course of a semester, enrolled students participate in regular small-group discussions facilitated by a graduate student mentor (following a faculty-directed curriculum), meet with their graduate student mentor for one-on-one academic advising, attend lectures and panel discussions featuring department faculty and alumni, and go on field trips to campus resources. Students are not required to be declared majors in order to participate.
Rules & Requirements

Repeat rules: Course may be repeated for credit when topic changes.

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Offered for pass/not pass grade only. Final exam not required.

ESPM 99 Supervised Independent Study and Research 1 - 3 Units
Supervised independent study or research on topics relevant to department that are not covered in depth by other courses. Open to students in good standing who, in consultation with a faculty sponsor, present a proposal with clearly formulated objectives and means of implementation. Intended for exceptional students.
Rules & Requirements

Prerequisites: Lower division standing (3.4 GPA or better), consent of instructor, adviser, and department chair. Usually restricted to ESPM majors

Repeat rules: Course may be repeated for credit. Course may be repeated for credit when topic changes.

Hours & Format

Fall and/or spring: 15 weeks - 0 hours of independent study per week

Summer:
6 weeks - 1-5 hours of independent study per week
8 weeks - 1-4 hours of independent study per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Offered for pass/not pass grade only. Final exam not required.

ESPM 100 Environmental Problem Solving 4 Units
Analysis of contrasting approaches to understanding and solving environmental and resource management problems. Case studies and hands-on problem solving that integrate concepts, principles, and practices from physical, biological, social, and economic disciplines. Their use in environmental policies and resource and management plans.
Rules & Requirements

Prerequisites: One course in ecology; one course in mathematics or statistics; one course in a social science or economics

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 1.5 hours of discussion per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructor: Frankie

ESPM 100ES Introduction to the Methods of Environmental Science 4 Units
Introduction to basic methods used in environmental research by biological, physical, and social scientists; designed to teach skills necessary to conduct independent thesis research in the required senior seminar, 196A-196B/196L. Topics include development of research questions, sampling methods, experimental design, statistical analysis, scientific writing and graphics, and introductions to special techniques for characterizing environmental conditions and features. This course is the prerequisite to 196A.
Rules & Requirements

Prerequisites: Completion of upper division statistics requirement. Open only to declared Environmental Sciences majors

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture, 1 hour of discussion, and 1.5 hours of fieldwork per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam not required.

Instructor: Battles

Formerly known as: Environmental Sciences 100

ESPM 102A Terrestrial Resource Ecology 4 Units
Provides a foundation in terrestrial ecology. Organized around five topics: environmental biophysics, ecosystem carbon balance, ecophysiology, population ecology, community ecology. Examines how each contributes to understanding of distribution and abundance of organisms in biosphere. Laboratory exercises, a mandatory weekend field trip, and a group research project provide opportunities to explore questions in depth. Emphasis on building quantitative understanding of ecological phenomena.
Rules & Requirements

Prerequisites: BIOLOGY 1A-1B or equivalent

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 4 hours of laboratory per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructor: McBride

ESPM 102B Natural Resource Sampling 2 Units
This course is designed to introduce students to the major sampling systems used in natural resources and ecology. It also introduces students to important sampling and measurement concepts in grassland, forest, wildlife, insect, soil, and water resources. May be taken without laboratory course 102BL.
Rules & Requirements

Prerequisites: Statistics 2 or 20

Hours & Format

Fall and/or spring: 15 weeks - 2 hours of lecture per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructor: Biging

ESPM 102BL Laboratory in Natural Resource Sampling 2 Units
This laboratory course is designed to introduce students to the major sampling systems used in natural resources and ecology. Field data is collected with various important sampling designs and analyzed. Mean values and confidence intervals are constructed from the data collected in this course. This course must be taken in conjunction with lecture course 102B.

Rules & Requirements

Prerequisites: Statistics 2 or 20

Hours & Format

Fall and/or spring: 15 weeks - 4 hours of laboratory per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructor: Biging

ESPM 102C Resource Management 4 Units
Presents concept and practical approaches to public and private natural resource management decision making. The focus is on goals, criteria, data, models, and technology for quantifying and communicating the consequences of planning options. A range of contemporary air, soil, wetland, rangeland, forest, social, economic, and ecosystem management problems is addressed.

Rules & Requirements

Prerequisites: Precalculus. 156, 184, and 70 are recommended

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 3 hours of laboratory per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

ESPM 102D Climate and Energy Policy 4 Units
This intermediate level course engages with both the politics and the design of climate and clean energy policy, with a focus on the United States. Key themes include political strategies to climate change, the choice of policy instruments, the role of various state actors and interest groups in policy making, the interaction of policy and low-carbon technology markets, and the US and global politics. The course combines the study of analytical concepts with in-depth case studies.

Rules & Requirements

Prerequisites: Environmental Science Policy and Management 60 Environmental Policy, Administration and Law or one lower division course in social science, or consent of instructor

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 1 hour of discussion per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructor: Meckling

ESPM C103 Principles of Conservation Biology 4 Units
A survey of the principles and practices of conservation biology. Factors that affect the creation, destruction, and distribution of biological diversity at the level of the gene, species, and ecosystem are examined. Tools and management options derived from ecology and evolutionary biology that can recover or prevent the loss of biological diversity are explored.

Rules & Requirements

Prerequisites: BIOLOGY 1A-1B or equivalent

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 1.5 hours of discussion per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructor: Beissinger

Also listed as: INTEGBI C156

ESPM C104 Modeling and Management of Biological Resources 4 Units
Models of population growth, chaos, life tables, and Leslie matrix theory. Harvesting and exploitation theory. Methods for analyzing population interactions, predation, competition. Fisheries, forest stands, and insect pest management. Genetic aspects of population management. Mathematical theory based on simple difference and ordinary differential equations. Use of simulation packages on microcomputers (previous experience with computers not required).
Rules & Requirements

Prerequisites: A course that includes differential and integral calculus

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 2 hours of laboratory per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructor: Getz

Also listed as: ENVECON C115

ESPM 105A Sierra Nevada Ecology 4 Units
Introduction to silvicultural theory, forest operations, and utilization and manufacture of forest products. Evaluation of silviculture for managing forest stands for multiple objectives including regeneration, stand density control, forest growth, genetic improvement, and prescribed burning. Introduction to harvest and access systems, wood structure and quality, and manufacture of forest product. Field trips and lectures to local areas illustrating different approaches to forest problems.
Rules & Requirements

Prerequisites: Eight hours biology

Hours & Format

Summer: 8 weeks - 10 hours of lecture and 30 hours of fieldwork per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructor: McBride

ESPM 105B Forest Measurements 1 Unit
This course teaches students how to use common forestry tools, maps, and various sampling methods to collect information about the forest environment. Thirty percent of the time is spent in the classroom learning about the techniques and working up field data. The remaining time is spent in the field applying these techniques in real world settings. Skills taught will include tree and plot measurement procedures, map reading, and simple field orienteering principles.
Rules & Requirements

Prerequisites: 105A

Hours & Format

Summer: 8 weeks - 12 hours of lecture and 18 hours of fieldwork per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

ESPM 105C Silviculture and Utilization 3 Units
Introduction to silvicultural theory, forest operations, and utilization and manufacture of forest products. Evaluation of silviculture for managing forest stands for multiple objectives including regeneration, stand density control, forest growth, genetic improvement, and prescribed burning. Introduction to harvest and access systems, wood structure and quality, and manufacture of forest product. Field trips and lectures to local areas illustrating different approaches to forest problems.
Rules & Requirements

Prerequisites: 105A, 105B

Hours & Format

Summer: 8 weeks - 13 hours of lecture and 24 hours of fieldwork per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructor: O'Hara

ESPM 105D Forest Management and Assessment 3 Units
Develop skills in evaluating forests and developing management strategies to meet ownership objectives. Develop integrated forest management plan for 160 acre parcel. During first week, inventory and assess ecological condition of the assigned parcel. During second week, develop comprehensive integrated forest resource plan, integrating water, wood, wildlife, range, fisheries, and recreation. Oral reports in both an office and field setting required and written management plan.
Rules & Requirements

Prerequisites: 105A, 105B, and 105C

Hours & Format

Summer: 8 weeks - 34 hours of lecture per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

ESPM C105 Natural History Museums and Biodiversity Science 3 Units
(1) survey of museum resources, including strategies for accession, conservation, collecting and acquiring material, administration, and policies; (2) strategies for making collections digitally available (digitization, databasing, georeferencing, mapping); (3) tools and approaches for examining historical specimens (genomics, isotopes, ecology, morphology, etc); and (4) data integration and inference. The final third of the course will involve individual projects within a given museum.
Hours & Format

Fall and/or spring: 15 weeks - 2 hours of lecture and 3 hours of laboratory per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Alternative to final exam.

Instructors: Gillespie, Mishler, Will, Marshall, McGuire

Also listed as: INTEGBI C105

ESPM 106 American Wildlife: Identification and Conservation 3 Units
Identification and life histories of wildlife in North America, with emphasis on species with important ecological and recreational value. The conservation of rare and endangered species is highlighted.
Hours & Format

Fall and/or spring: 15 weeks - 1 hour of lecture and 3 hours of laboratory per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructor: Barrett

ESPM C107 Biology and Geomorphology of Tropical Islands 13 Units
Natural history and evolutionary biology of island terrestrial and freshwater organisms, and of marine organisms in the coral reef and lagoon systems will be studied, and the geomorphology of volcanic islands, coral reefs, and reef islands will be discussed. Features of island biogeography will be illustrated with topics linked to subsequent field studies on the island of Moorea (French Polynesia).
Hours & Format

Fall and/or spring: 15 weeks - 12 hours of lecture and 6 hours of fieldwork per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Also listed as: INTEGBI 158LF

ESPM 108A Trees: Taxonomy, Growth, and Structures 3 Units
Study of trees and associated woody species including their taxonomy and distribution, modes of shoot growth and diameter growth, and stem structure. Modes of stem structure and growth will be considered in relation to habitat and life cycles, and to suitability for timber value. Instruction in oral communication. Oral presentation required.
Hours & Format

Fall and/or spring: 15 weeks - 2 hours of lecture and 3 hours of laboratory per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructor: Dodd

ESPM 108B Environmental Change Genetics 3 Units
This course will examine the consequences of environmental change on the levels and distribution of genetic diversity within species. Students will be introduced to methods of analysis and their application to organisms from a range of ecosystems. The fate of populations under rapid environmental change will be assessed in the light of dispersal and adaptation (genetic and epigenetic) potential. Students will learn to use population genetics freeware to evaluate molecular data.
Rules & Requirements

Prerequisites: BIOLOGY 1A-1B or equivalents

Hours & Format

Fall and/or spring: 15 weeks - 2 hours of lecture and 1 hour of discussion per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructor: Dodd

ESPM 110 Primate Ecology 4 Units
This course examines the comparative ecology of sympatric primate species in forests of Central and South America, Africa, and Southeast Asia. In addition to primate ecology, students will master comparative information on the three main tropical forest regions of the world and examine the impact of selective logging on primate densities and diversities in each area.
Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 1 hour of discussion per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructor: Milton

ESPM 111 Ecosystem Ecology 4 Units
This course will develop principles of ecosystems ecology, emphasizing terrestrial ecosystems, and will consider how these principles apply to ecosystem recovery and to regional and global fluxes of carbon and nutrients.
Rules & Requirements

Prerequisites: BIOLOGY 1B

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 1 hour of discussion per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructors: Baldocchi, Silver

Formerly known as: C111, Integrative Biology C155

ESPM 112 Microbial Ecology 3 Units
Introduction to the ecology of microorganisms. Topics include the ecology and evolution of microbes and their relationship with each other and the environment. The role and function of microbes in several ecosystems is also discussed.
Rules & Requirements

Prerequisites: BIOLOGY 1A and BIOLOGY 1B; Molecular and Cell Biology 102 is recommended

Hours & Format

Fall and/or spring: 15 weeks - 2 hours of lecture and 1 hour of discussion per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

ESPM 113 Insect Ecology 2 Units
Ecology of insects: interactions with the physical environment; structure and functioning of insect populations and communities; behavioral ecology of predator-prey interactions; plant-insect interactions; social insects; pollination biology; applied insect ecology.
Rules & Requirements

Prerequisites: BIOLOGY 1B or consent of instructor

Hours & Format

Fall and/or spring: 15 weeks - 2 hours of lecture per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructor: Welter

ESPM 114 Wildlife Ecology 3 Units
Introduction to wildlife ecology and its relationship to management programs. Includes population, community, and ecosystem levels of organization, followed by selected case studies.
Rules & Requirements

Prerequisites: Upper division or graduate standing

Hours & Format

Fall and/or spring: 15 weeks - 2 hours of lecture and 1 hour of discussion per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructor: Brashares

ESPM 115B Biology of Aquatic Insects 2 Units
Identification and ecology of aquatic insects, including their role as indicators of environmental quality.
Rules & Requirements

Prerequisites: Introductory course in a biological science

Hours & Format

Fall and/or spring: 15 weeks - 2 hours of lecture per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructor: Resh

ESPM 115C Fish Ecology 3 Units
Introduction to fish ecology, with particular emphasis on the identification and ecology of California's inland fishes. This course will expose students to the diversity of fishes found in California, emphasizing the physical (e.g., temperature, flow), biotic (e.g., predation, competition), and human-related (e.g., dams, fisheries) factors that affect the distribution, diversity, and abundance of these fishes.
Rules & Requirements

Prerequisites: Introductory course in biological science; upper division or graduate standing

Hours & Format

Fall and/or spring: 15 weeks - 2 hours of lecture, 1 hour of fieldwork, and 3 hours of laboratory per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructor: Carlson

ESPM C115C Fish Ecology 3 Units
Introduction to fish ecology, with particular emphasis on the identification and ecology of California's inland fishes. This course will expose students to the diversity of fishes found in California, emphasizing the physical (e.g., temperature, flow), biotic (e.g., predation, competition), and human-related (e.g., dams, fisheries) factors that affect the distribution, diversity, and abundance of these fishes.
Rules & Requirements

Prerequisites: Introductory course in biological science; upper division or graduate standing

Hours & Format

Fall and/or spring: 15 weeks - 2 hours of lecture and 3 hours of laboratory per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructor: Carlson

Also listed as: INTEGBI C176L

ESPM 116B Range Ecology, Improvements, and Management 3 Units
The ecological basis for range management activities, considered in the context of western range ecosystem types. Specific range improvement and range management practices are discussed in the context of ecosystem processes.
Rules & Requirements

Prerequisites: One course in ecology

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructors: Allen-Diaz, Bartolome

ESPM 116C Tropical Forest Ecology 3 Units
Introduction to the ecology of terrestrial tropical ecosystems, with particular emphasis on neotropical forests. Explores unique aspects of tropical ecosystems, especially nutrient cycles, net primary productivity, biological diversity, forest structure and dynamics, disturbance ecology, and the natural history of key forest organisms. Basic ecology is integrated with discussion of human disturbances, restoration of tropical ecosystems, and the global importance of tropical forests.
Rules & Requirements

Prerequisites: One course in ecology and one course in chemistry or consent of instructor

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructor: Silver

ESPM 117 Urban Garden Ecosystems 4 Units
An ecosystem approach to the study of urban gardens with an organic perspective. Topics include fundamentals of horticulture, soil properties and fertility, pest and disease management, and food perservation. Laboratories include methods in garden design, plant propagation, compost technique, soil preparation, irrigation systems, pest management, individual or group projects, demonstrations, and discussions. Enrollment may be limited.
Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 3 hours of laboratory per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructor: Altieri

ESPM 118 Agricultural Ecology 3 Units
Examines in a holistic framework fundamental biological, technical, socio-economic, and political processes that govern agroecosystem productivity and stability. Management techniques and farming systems' designs that sustain longterm production are emphasized. One Saturday field trip and one optional field trip.
Rules & Requirements

Prerequisites: Consent of instructor

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructor: Altieri

ESPM 119 Chemical Ecology 2 Units
Plant toxins and their effects on animals, hormonal interactions between plants and animals, feeding preferences, animal pheromones, and defense substances, biochemical interactions between higher plants, and phytoalexins and phytotoxins.
Rules & Requirements

Prerequisites: Introductory courses in organic chemistry and biology or consent of instructor

Hours & Format

Fall and/or spring: 15 weeks - 2 hours of lecture per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructor: Kubo

ESPM 120 Soil Characteristics 3 Units
Introduction to physical, engineering, chemical, and biological properties of soil; methods of soil description, identification, geographic distribution and uses; the role of soil in supplying water and nutrients to plants; and soil organisms. Soil management for agriculture, forestry, and urban uses will also be discussed. Includes a Saturday field trip.
Rules & Requirements

Prerequisites: Chemistry 1A, 3A

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructor: Ammundson

ESPM 121 Development and Classification of Soils 3 Units
Development, morphology, and classification of soils as related to geology, environmental factors, and time. Soils as functioning parts of ecosystems; use of soils in archeological and paleoclimatic studies; anthropogenic effects on soil ecosystems.
Rules & Requirements

Prerequisites: Earth and Planetary Sciences 100A-100B, and Chemistry 1A, 3A recommended

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructor: Amundson

ESPM 122 Field Study of Soil Development 1 Unit
Five day-long Saturday field trips to locations in central California. The field study of soil development and morphology. Methods of soil morphological descriptions; study of factors controlling soil development; relationship of soil morphology to land use; quaternary geology of central California; use of soils in dating landscapes.
Hours & Format

Fall and/or spring: 15 weeks - 0 hours of fieldwork per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam not required.

Instructor: Amundson

ESPM C126 Animal Behavior 4 Units
An introduction to comparative animal behavior and behavioral physiology in an evolutionary context, including but not limited to analysis of behavior, genetics and development, learning, aggression, reproduction, adaptiveness, and physiological substrates.
Rules & Requirements

Prerequisites: BIOLOGY 1A, 1B, or Environmental Science, Policy, and Management 140. Molecular and Cell Biology 140 and C160 recommended

Credit Restrictions: Students will receive no credit for 144 after taking C144, 145, 146LF, or Psychology C115B.

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 1 hour of discussion per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructors: Lacey, Caldwell, Bentley, Elias

Also listed as: INTEGBI C144

ESPM C128 Chemistry of Soils 3 Units
Chemical mechanisms of reactions controlling the fate and mobility of nutrients and pollutants in soils. Role of soil minerals and humus in geochemical pathways of nutrient biovailability and pollutant detoxification. Chemical modeling of nutrient and pollutant soil chemistry. Applications to soil acidity and salinity.
Rules & Requirements

Prerequisites: Civil Engineering 111 or equivalent

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructor: Sposito

Also listed as: CIV ENG C116

ESPM C129 Biometeorology 3 Units
This course describes how the physical environment (light, wind, temperature, humidity) of plants and soil affects the physiological status of plants and how plants affect their physical environment. Using experimental data and theory, it examines physical, biological, and chemical processes affecting transfer of momentum, energy, and material (water, CO2, atmospheric trace gases) between vegetation and the atmosphere. Plant biometeorology instrumentation and measurements are also discussed.
Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructor: Baldocchi

Also listed as: EPS C129

ESPM C130 Terrestrial Hydrology 4 Units
A quantitative introduction to the hydrology of the terrestrial environment including lower atmosphere, watersheds, lakes, and streams. All aspects of the hydrologic cycle, including precipitation, infiltration, evapotranspiration, overland flow, streamflow, and groundwater flow. Chemistry and dating of groundwater and surface water. Development of quantitative insights through problem solving and use of simple models. This course requires one field experiment and several group computer lab assignments.
Rules & Requirements

Prerequisites: Chemistry 1A, Mathematics 1A-1B, PHYSICS 7A, or consent of instructor

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Alternative to final exam.

Instructor: Larsen

Also listed as: GEOG C136

ESPM 131 Soil Microbial Ecology 3 Units
Introduction to the organisms that live in the soil and their activities in the soil ecosystem. Lectures will cover the physical and chemical properties of soils and the soil as a habitat for microorganisms, the diversity and ecology of soil microorganisms, and their activity in the context of biogeochemical cycling, plant-microbe interactions, global environmental change and bioremediation. Goals: To gain fundamental knowledge of the occurrence and activities of soil microorganisms and their influence on soil productivity and environmental quality as well as potential applications of soil microbiology.
Rules & Requirements

Prerequisites: BIOLOGY 1A-1B

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructor: Pallud

ESPM 132 Spider Biology 4 Units
Covers topics ranging from mythological ideas about spiders and their importance in traditional cultures and folklore, to diversity patterns, ecology, behavior, and general biology of spiders. In the laboratory section, students learn to identify local spiders and to prepare a collection.
Rules & Requirements

Prerequisites: BIOLOGY 1A-1B

Hours & Format

Fall and/or spring: 15 weeks - 2 hours of lecture and 3 hours of laboratory per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructor: Gillespie

ESPM C133 Water Resources and the Environment 3 Units
Distribution, dynamics, and use of water resources in the global environment. Water scarcity, water rights, and water wars. The terrestrial hydrologic cycle. Contemporary environmental issues in water resource management, including droughts, floods, saltwater intrusion, water contamination and remediation, river restoration, hydraulic fracturing, dams, and engineering of waterways. The role of water in ecosystem processes and geomorphology. How water resources are measured and monitored. Basic water resource calculations. Effects of climate change on water quantity, quality, and timing.
Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Alternative to final exam.

Instructor: Larsen

Also listed as: GEOG C135

ESPM 134 Fire, Insects, and Diseases in Forest Ecosystems 3 Units
Study of the influence of fire, insects, and diseases on species diversity, succession, and the survival of North American forests including the evolution of these interactions due to modern human policies of preservation and management and exploitation.
Rules & Requirements

Prerequisites: One course in biology

Hours & Format

Fall and/or spring: 15 weeks - 2 hours of lecture per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructor: Bruns

ESPM 137 Landscape Ecology 3 Units
This course will cover broad topics in landscape ecology with the goal of answering the core questions of how patterns develop on landscapes, how these patterns relate to biotic and abiotic processes, and how these patterns and processes change through time. Lab exercises will focus on practical aspects of landscape ecological analysis using modern tools like remote sensing, GIS, population modeling, and landscape genetics.
Hours & Format

Fall and/or spring: 15 weeks - 2 hours of lecture and 3 hours of laboratory per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructor: Wang

ESPM C138 Introduction to Comparative Virology 4 Units
This course will provide a comparative overview of virus life cycles and strategies viruses use to infect and replicate in hosts. We will discuss virus structure and classification and the molecular basis of viral reproduction, evolution, assembly, and virus-host interactions. Common features used during virus replication and host cellular responses to infection will be covered. Topics also included are common and emerging virus diseases, their control, and factors affecting their spread.
Rules & Requirements

Prerequisites: Introductory chemistry (Chemistry 1A or 3A-3B or equivalent) and introductory biology (BIOLOGY 1A, 1AL, and 1B or equivalent) and general biochemistry (Molecular and Cell Biology C100A or equivalent--preferably completed but may be taken concurrently)

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructors: Glaunsinger, Jackson

Also listed as: MCELLBI C114/PLANTBI C114

ESPM 140 General Entomology 4 Units
Biology of insects, including classification of orders and common families, morphology, physiology, behavior, and ecology.
Rules & Requirements

Prerequisites: Introductory course in a biological science

Hours & Format

Fall and/or spring: 15 weeks - 2 hours of lecture and 6 hours of laboratory per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructor: Roderick

ESPM 141 Development of Taxonomic Identification Keys and Natural Language Descriptions 2 Units
Tools for identification of organisms to species or higher-level taxonomic groups are critically needed. This course will allow students to learn both the theoretical basis of and practical skills for building traditional dichotomous keys and various types of interactive keys. Emphasis will be on learning to build a web-based interactive key and developing natural language descriptions through students' individual projects. Students can train on the Microptics Digital XLT imaging system and learn to use Lucid and Lucid Phoenix software. Other Internet identification tools will also be surveyed and discussed. Each student will produce an online key as a project.
Rules & Requirements

Prerequisites: Prior knowledge of focus group for project

Repeat rules: Course may be repeated for credit. Course may be repeated for credit when topic changes.

Hours & Format

Fall and/or spring: 15 weeks - 2 hours of lecture per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam not required.

Instructor: Will

ESPM 142 Insect Behavior 3 Units
Insects display an incredibly rich array of behaviors, including extravagant displays, rituals, deception, sociality, and slavery. In some cases, these behaviors are innate, but in other cases individual insects can actively learn and modify their future behaviors based on real-life experiences. This course will focus on the development, structure, and function of insect behaviors, using examples from classic and recent publications. We will examine the evolution of insect behavior, how these behaviors play a role in the ecology of the organisms that express them, and explore various modes of communication that allow insects to judge their environment and respond appropriately.
Rules & Requirements

Prerequisites: BIOLOGY 1A and 1B

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 1 hour of discussion per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructor: Tsutsui

ESPM 144 Insect Physiology 3 Units
A survey of the unique physiological mechanisms of insects, including the analysis of physiological systems at the cellular-molecular level. The roles of the nervous and endocrine systems in coordinating physiological processes are emphasized.
Rules & Requirements

Prerequisites: General biology, zoology, or entomology

Hours & Format

Fall and/or spring: 15 weeks - 2 hours of lecture and 1 hour of discussion per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructor: Tanouye

ESPM 146L Medical and Veterinary Entomology Laboratory 1 Unit
Laboratory identification of the major arthropod vectors of disease agents to humans and other animals, and study of the structural adaptations associated with free-living and parasitic stages and with blood feeding.
Hours & Format

Fall and/or spring: 15 weeks - 3 hours of laboratory per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructor: Lane

ESPM 147 Field Entomology 1 Unit
This course introduces methods and techniques for collection and preparation of specimens and associated biological data, field observation, and recording and interpretation of arthropod behavior, relationships to habitats, and plant-arthropod interactions.
Rules & Requirements

Prerequisites: 42, 140, or consent of instructor. 42, 140, or consent of instructor

Repeat rules: Course may be repeated for a maximum of 4.0 units which may be taken in the same term.Course may be repeated for a maximum of 4 units.

Hours & Format

Fall and/or spring: 15 weeks - 1 hour of laboratory per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

ESPM C148 Pesticide Chemistry and Toxicology 3 Units
Chemical composition of pesticides and related compounds, their mode of action, resistance mechanisms, and methods of evaluating their safety and activity.
Rules & Requirements

Prerequisites: Introductory courses in organic chemistry and biology, or consent of instructor

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructor: Casida

Also listed as: NUSCTX C114

ESPM C149 Molecular Ecology 4 Units
This course focuses on the use of molecular genetic information in ecology. Applications and techniques covered range from analysis of parentage and relatedness (DNA fingerprinting and multilocus genetic analysis) through gene flow, biogeographic history and community composition (comparative DNA sequencing) to analysis of diet and trophic interactions (biological isotopes). Grades are based on one final exam, problem sheets, and a critique of a recent research paper.
Rules & Requirements

Prerequisites: C163, 161, or Molecular and Cell Biology C142 (may be taken concurrently), or consent of instructor

Credit Restrictions: Students will receive no credit for C149 if they took 149 prior to spring 2003.

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 1 hour of discussion per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Formerly known as: 149

Also listed as: INTEGBI C149

ESPM 150 Special Topics in Environmental Science, Policy, and Management 2 - 4 Units
Special topics in Environmental Science, Policy, and Management. Topics may vary from semester to semester.
Rules & Requirements

Repeat rules: Course may be repeated for credit as topic varies. Course may be repeated for credit when topic changes.

Hours & Format

Fall and/or spring: 15 weeks - 2-4 hours of lecture per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

ESPM 151 Society, Environment, and Culture 4 Units
Issues, concepts, and processes pertaining to the diverse approaches to understanding the relationship between human society, culture, and the environment. Core ideas in and approaches to science, nature, culture, feminism, indigeneity, and postcolonialism as they pertain to the environment and society. Critical analysis and discussion of fundamental and contemporary issues and texts in the field.
Rules & Requirements

Prerequisites: Upper division standing

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 1.5 hours of discussion per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

ESPM 152 Global Change Biology 3 Units
The course will focus on understanding how anthropogenic changes to the global environment (e.g., climate change, habitat destruction, global trade) impact organisms. We will evaluate responses to global change in a wide diversity of organisms (from microbes to mammals) and ecosystems (from arctic to temperate to tropical). We will also explore conservation and mitigation strategies in the face of global change. Discussions will draw on recent primary research and case studies.
Rules & Requirements

Prerequisites: An introductory course in biological science; upper division or graduate standing

Hours & Format

Fall and/or spring: 15 weeks - 2 hours of lecture and 1 hour of discussion per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructor: Rosenblum

ESPM 155 Sociology and Political Ecology of Agro-Food Systems 4 Units
Sociology and political ecology of agro-food systems; explores the nexus of agriculture, society, the environment; analysis of agro-food systems and social and environmental movements; examination of alternative agricultural initiatives--(i.e. fair trade, food justice/food sovereignty, organic farming, urban agriculture).
Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 1 hour of discussion per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructor: De Master

ESPM 156 Animal Communication 3 Units
Communication is central to the lives of most, if not all animals. How and why animals communicate is thus central to understanding the ecology, behavior, neurobiology, and evolution of animal systems. This course will focus on understanding the basic principles driving the communication system of a species, drawing together topics ranging from the physical properties of the environment, physiology of sensory systems, animal behavior and ecology, using examples from classic and recent publications.
Rules & Requirements

Prerequisites: BIOLOGY 1B. Animal Behavior (ESPM C126/IB C144) recommended

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructor: Elias

ESPM 158 Biodiversity Conservation in Working Landscapes 4 Units
Most of the world’s lands and seas occur outside of protected ares, so this course examines biodiversity conservation in "working landscapes" like farms, ranches, and urban areas. Students will study fundamental concepts in ecology and conservation biology, and evaluate case studies to assess how conservation approaches have evolved and which are working. Students will gain skills in evaluating and summarizing scientific literature, and in-depth knowledge of conservation in practice.
Rules & Requirements

Prerequisites: Biology IB is required; Environmental Science Policy and Management C103/Integrative Biology C156 or other ecology course desired

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Alternative to final exam.

Instructor: Kremen

ESPM C159 Human Diet 4 Units
Since we eat every day, wouldn’t it be useful to learn more about human dietary practices? A broad overview of the complex interrelationship between humans and their foods. Topics include the human dietary niche, biological variation related to diet, diet and disease, domestication of staple crops, food processing techniques and development of regional cuisines, modern diets and their problems, food taboos, human attitudes toward foods, and dietary politics.
Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 1 hour of discussion per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructor: Milton

Also listed as: NUSCTX C159

ESPM 160AC American Environmental and Cultural History 4 Units
History of the American environment and the ways in which different cultural groups have perceived, used, managed, and conserved it from colonial times to the present. Cultures include American Indians and European and African Americans. Natural resources development includes gathering-hunting-fishing; farming, mining, ranching, forestry, and urbanization. Changes in attitudes and behaviors toward nature and past and present conservation and environmental movements are also examined.
Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 1.5 hours of discussion per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructor: Merchant

Formerly known as: 160AC

Also listed as: HISTORY 120AC

ESPM 161 Environmental Philosophy and Ethics 4 Units
A critical analysis of human environments as physical, social-economic, and technocultural ecosystems with emphasis on the role of ideologies, beliefs, attitudes, and behavior. An examination of contemporary environmental literature and the philosophies embodied therein.
Hours & Format

Fall and/or spring: 15 weeks - 2 hours of lecture and 1.5 hours of discussion per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructor: Merchant

ESPM 162 Bioethics and Society 4 Units
Exploration of the ethical dilemmas arising from recent advances in the biological sciences: genetic engineering, sociobiology, health care delivery, behavior modification, patients' rights, social or private control of research.
Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 1 hour of discussion per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructor: Winickoff

ESPM 163AC Environmental Justice: Race, Class, Equity, and the Environment 4 Units
Overview of the field of environmental justice, analyzing the implications of race, class, labor, and equity on environmental degradation and regulation. Environmental justice movements and struggles within poor and people of color communities in the U.S., including: African Americans, Latino Americans, and Native American Indians. Frameworks and methods for analyzing race, class, and labor. Cases of environmental injustice, community and government responses, and future strategies for achieving environmental and labor justice.
Hours & Format

Fall and/or spring: 15 weeks - 2 hours of lecture and 1 hour of discussion per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructor: O'Rourke

Formerly known as: Sociology 128AC

Also listed as: SOCIOL 137AC

ESPM 164 GIS and Environmental Science 3 Units
The objectives of the course are 1) review the GIS workflow (acquisition, representation, validation, analysis, and output), 2) to understand the issues surrounding, and algorithms used in a particular GIS application, 3) to learn about advanced topics in geospatial science across environmental and social sciences, and 4) to develop an operational GIS project in a chosen area.
Rules & Requirements

Prerequisites: Upper division status and an introductory course in GIS and a course in programming

Hours & Format

Fall and/or spring: 15 weeks - 2 hours of laboratory and 3 hours of lecture per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Alternative to final exam.

Instructor: Kelly

ESPM 165 International Rural Development Policy 4 Units
Comparative analysis of policy systems governing natural resource development in the rural Third World. Emphasis on organization and function of agricultural and mineral development, with particular consideration of rural hunger, resource availability, technology, and patterns of international aid.
Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 1 hour of discussion per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructor: Carr

ESPM 166 Natural Resource Policy and Indigenous Peoples 4 Units
Critical analysis of the historical transformation of indigenous peoples and their environments in North America and the Third World. The origins and specific patterns of socio-economic problems in these areas, existing and alternative future development policies and their effects.
Rules & Requirements

Prerequisites: 165 (formerly CRS 163) or consent of instructor; upper division standing

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 1 hour of discussion per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

ESPM C167 Environmental Health and Development 4 Units
The health effects of environmental alterations caused by development programs and other human activities in both developing and developed areas. Case studies will contextualize methodological information and incorporate a global perspective on environmentally mediated diseases in diverse populations. Topics include water management; population change; toxics; energy development; air pollution; climate change; chemical use, etc.
Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 1 hour of discussion per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructor: Morello-Frosch

Also listed as: PB HLTH C160

ESPM 168 Political Ecology 4 Units
Analysis of environmental problems in an international context with a focus on political and economic processes, resource access, and representations of nature. Discussion of the ways in which film, literature, and the news media reflect and influence environmental politics. Approaches to policy analysis arising from recent social theory.
Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 1 hour of discussion per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructor: Peluso

ESPM 169 International Environmental Politics 4 Units
The dynamics of international politics are examined over the last 25 years. Attention is paid to different perspectives in global environmental politics, the actors involved, how well international agreements address the problems they are supposed to solve, and the main debates in the field, including trade-environmental conflicts, security, and environmental justice issues. Issues covered vary, but may include climate change, biodiversity, population, and toxics.
Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 1 hour of discussion per week

Summer: 6 weeks - 7.5 hours of lecture and 2.5 hours of discussion per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructor: O'Neill

ESPM C170 Carbon Cycle Dynamics 3 Units
The focus is the (unsolved) puzzle of the contemporary carbon cycle. Why is the concentration of atmospheric CO2 changing at the rate observed? What are the terrestrial and oceanic processes that add and remove carbon from the atmosphere? What are the carbon management strategies under discussion? How can emission protocols be verified? Students are encouraged to gain hands-on experience with the available data, and learn modeling skills to evaluate hypotheses of carbon sources and sinks.
Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam not required.

Instructor: Fung

Also listed as: EPS C183

ESPM 172 Photogrammetry and Remote Sensing 3 Units
This course introduces the concepts and principles of photogrammetry and remote sensing, specifically aerial photography, as important data collection and analysis tools for natural resources management in spatial sciences such as ecology, geography, geology, civil engineering, and environmental design. Photo measures of scale, area, and object height, flight planning, an introduction to the electromagnetic spectrum, photo interpretation and mapping, digital remote sensing, and data management in geographic information systems will be discussed.
Rules & Requirements

Prerequisites: Geometry, algebra, and trigonometry

Hours & Format

Fall and/or spring: 15 weeks - 2 hours of lecture and 3 hours of laboratory per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructor: Gong

ESPM 173 Introduction to Ecological Data Analysis 3 Units
Introduces concepts and methods for practical analysis of data from ecology and related disciplines. Topics include data summaries, distributions, and probability; comparison of data groups using t-tests and analysis of variance; comparison of multi-factor groups using analysis of variance; evaluation of continuous relationships between variables using regression and correlation; and a glimpse at more advanced topics. In computer laboratories, students put concepts into practice and interpret results.
Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 2 hours of laboratory per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructor: de Valpine

ESPM 174 Design and Analysis of Ecological Research 4 Units
Surveys major designs and analyses for biological field and laborabory studies. Topics include data distributions; regression; analysis of variance; fixed and random effects; blocking, split plots, and repeated measures; maximum likelihood; Generalized Linear Models; basic computer programming. Relies on math to interpret and manipulate equations supported by computer simulations. Examples include population, ecosystem, behavioral, and evolutionary ecology.
Rules & Requirements

Prerequisites: One year calculus; one semester statistics or consent of instructor

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 1 hour of laboratory per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructor: de Valpine

ESPM 175A Senior Research Seminar in Environmental Sciences 3 Units
Students design and conduct a senior thesis project, which requires identifying a testable question or problem, designing and executing a research protocol, analyzing data, deriving conclusions, and presenting the research in a scientific paper and an oral presentation. Lectures and assignments exphasize research design, data analysis, scientific writing, and scientific communication.
Rules & Requirements

Prerequisites: Senior standing in Environmental Science, Policy, and Management major and completion of Environmental Science, Policy, and Management 100

Hours & Format

Fall and/or spring: 15 weeks - 4 hours of seminar per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam not required.

Formerly known as: Environmental Science 196A

ESPM 175B Senior Research Seminar in Environmental Sciences 3 Units
Students design and conduct a senior thesis project, which requires identifying a testable question or problem, designing and executing a research protocol, analyzing data, deriving conclusions, and presenting the research in a scientific paper and an oral presentation. Lectures and assignments exphasize research design, data analysis, scientific writing, and scientific communication.
Rules & Requirements

Prerequisites: Senior standing in Environmental Science, Policy, and Management major and completion of Environmental Science, Policy and Management 100 and Environmental Science, Policy, and Management 175A

Hours & Format

Fall and/or spring: 15 weeks - 4 hours of seminar per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam not required.

Formerly known as: Environmental Science 196B

ESPM 175L Senior Research Laboratory in Environmental Sciences 1 Unit
Independent laboratory or field research in support of the required senior seminar project.
Rules & Requirements

Prerequisites: Must be taken concurrently with Environmental Science, Policy, and Management 175A-175B

Repeat rules: Course may be repeated for credit. Course may be repeated for credit when topic changes.

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of laboratory per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam not required.

Formerly known as: Environmental Science 196L

ESPM H175A Senior Research Seminar in Environmental Sciences 3 Units
ESPM H175A and H175B are honors courses that eligible Environmental Sciences students may substitute for ESPM 175A and 175B. Students design and conduct a senior thesis project, which requires identifying a research question or problem, designing and executing a research protocol, analyzing data, deriving conclusions, and presenting the research in a scientific paper and an oral presentation.Lectures and assignments emphasize research design, data analysis, scientific writing, and scientific communication.
Rules & Requirements

Prerequisites: ESPM 100ES, upper division standing, and minimum GPA. See CNR Honors website for current minimum GPA. http://nature.berkeley.edu/site/honors_program.php

Hours & Format

Fall and/or spring: 15 weeks - 4 hours of seminar per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Alternative to final exam.

Instructors: Spreyer, Mendez

ESPM H175B Senior Research Seminar in Environmental Sciences 3 Units
ESPM H175A and H175B are honors courses that eligible Environmental Sciences students may substitute for ESPM 175A and 175B. Students design and conduct a senior thesis project, which requires identifying a research question or problem, designing and executing a research protocol, analyzing data, deriving conclusions, and presenting the research in a scientific paper and an oral presentation. Lectures and assignments emphasize research design, data analysis, scientific writing, and scientific communication.
Rules & Requirements

Prerequisites: ESPM 100ES, upper division standing, and minimum GPA. See CNR Honors website for current minimum GPA. http://nature.berkeley.edu/site/honors_program.php

Hours & Format

Fall and/or spring: 15 weeks - 4 hours of seminar per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Alternative to final exam.

Instructors: Spreyer, Mendez

ESPM H175L Senior Research Laboratory in Environmental Sciences 1 Unit
ESPM H175L is an honors course that eligible Environmental Sciences students may substitute for ESPM 175L. Independent laboratory or field research in support of the required senior seminar project.
Rules & Requirements

Prerequisites: Must be taken concurrently with Environmental Science, Policy, and Management 175A-175B or H175A-H175B

Repeat rules: Course may be repeated for credit when topic changes.

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of laboratory per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam not required.

Instructors: Spreyer, Mendez

ESPM C177 GIS and Environmental Spatial Data Analysis 4 Units
This course offers an introduction to spatial data analysis. It integrates ArcGIS analysis with spatial statistical analysis for the study of pattern and process applicable to a wide variety of fields. Major topics covered include: spatial sampling, processing data with ARC Info, exploratory GIS analysis, spatial decomposition, spatial point patterns and Ripley's K function, spatial autocorrelation, geostatistics, spatially weighted regression, spatial autoregression, generalized linear models and generalized linear mixed models.
Rules & Requirements

Prerequisites: Requirements are course in GIS and a course in probability and statistics. We invite participation of undergraduates and graduate students from: ESPM, Landscape Architecture & Environmental Planning, City and Regional Planning, IB, Civil Engineering, Energy and Resources Group, Public Health, Earth and Planetary Science, and other campus departments or units with students interested in learning and using spatial analysis for the environment- both natural and built

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 3 hours of laboratory per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Alternative to final exam.

Instructors: Biging, Radke

Also listed as: LD ARCH C177

ESPM 178B Environmental Science Education Practicum 4 Units
Framed around the topic of sustainability, the course engages students from different science majors to apply the content knowledge from their discipline to build curriculum pieces for presentation in high school classrooms. Students develop pedagogical content knowledge and relate teaching theory to practice. Additional topics covered include classroom management and leadership, lesson planning, presentation skills, and readings in science education.
Rules & Requirements

Prerequisites: Consent of instructor

Repeat rules: Course may be repeated for credit. Course may be repeated for credit when topic changes.

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture, 1 hour of discussion, and 3 hours of fieldwork per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

ESPM C180 Air Pollution 3 Units
This course is an introduction to air pollution and the chemistry of earth's atmosphere. We will focus on the fundamental natural processes controlling trace gas and aerosol concentrations in the atmosphere, and how anthropogenic activity has affected those processes at the local, regional, and global scales. Specific topics include stratospheric ozone depletion, increasing concentrations of green house gasses, smog, and changes in the oxidation capacity of the troposphere.
Rules & Requirements

Prerequisites: Chemistry 1A-1B, PHYSICS 8A or consent of instructor

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 1 hour of discussion per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructor: Goldstein

Also listed as: CIV ENG C106/EPS C180

ESPM 181A Fire Ecology 3 Units
Fundamentals of wildland fire including fire behavior modeling, fire history methods, prescribed fire techniques, fire ecology, fire management, fire in the urban-wildland intermix, wildland fire, and ecosystem sustainability. Laboratories on inventory methods, fire history, modeling of fire behavior and risk, and prescribed burning.
Rules & Requirements

Prerequisites: Consent of instructor

Hours & Format

Fall and/or spring: 15 weeks - 2 hours of lecture and 3 hours of laboratory per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructor: Stephens

ESPM 182 Forest Operations Management 3 Units
Examination of "on the ground" activities necessary to manage forests. Planning, design, and implementation of activities such as road building, forest harvesting, erosion control, and fire suppression are the central focus of the course. Aspects of timber harvest planning, archaeological surveys related to forest management, road closure, stream bank stabilization, and legislative control of forest operations will also be explored.
Rules & Requirements

Prerequisites: 101A, 101B, 101C and 101D

Hours & Format

Fall and/or spring: 15 weeks - 1.5 hours of lecture and 4 hours of laboratory per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructor: York

ESPM 183 Forest Planning and Management 4 Units
Planning and management of forestlands to meet multiple objectives of land owners and the society. Processing and organization of land data and forest ecosystem dynamics for quantitative analysis with GIS. Fundamentals of land-use planning, valuation, multiple goal decision analysis, and forest management scheduling. Quantitative, analytical, and communication skills are emphasized. Oral presentation required.
Rules & Requirements

Prerequisites: 70, 102B or 171, 102C and 185

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 3 hours of laboratory per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

ESPM C183 Forest Ecosystem Management 4 Units
Introduces students to concepts and quantitative tools needed for the sustainable management of multi-use forest ecosystems. Topics covered include: estimation of ecological, economic, and social values: construction of dynamic forest models, methods for optimal decision-making, and development of forest management plans. Application to current issues in temperate and tropical forest management are discussed. Quantitative, analytical, and communication skills are emphasized. Oral presentation required.
Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 3 hours of laboratory per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructor: Potts

Also listed as: ENVECON C183

ESPM 184 Agroforestry Systems 3 Units
Agroforestry principles and systems in use worldwide are examined, with emphasis on contemporary temperate agroforestry system design and management. Economic, biologic, social, and political conditions for successful agroforestry systems are analyzed. Some laboratory sessions will be field trips that will extend beyond the scheduled lab time.
Rules & Requirements

Prerequisites: Upper division standing

Hours & Format

Fall and/or spring: 15 weeks - 2 hours of lecture and 3 hours of laboratory per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructor: Altieri

ESPM 185 Applied Forest Ecology 4 Units
Concepts and applications of silviculture for the establishment, growth, composition, and quality of forest trees and stands. Silviculture is presented as a tool to meet multiple resource and ecosystem management objectives related to wildlife habitat, watershed resources, forest health, or timber production. Two weekend field trips will be scheduled in lieu of several laboratories.
Rules & Requirements

Prerequisites: 102A or course in community ecology

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 4 hours of laboratory per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructor: O'Hara

ESPM 186 Management and Conservation of Rangeland Ecosystems 4 Units
Begins with the evolution and domestication of grazing animals, continues through ranching and rangeland stewardship practices, and explores new institutional arrangements for conservation and restoration. Woodlands, grasslands, and shrublands provide biodiversity, wildlife habitat, watershed, recreation, open space, and forage. Human practices and ecosystem dynamics meet in rangeland management. Methods for changing, predicting, or assessing the results.
Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 1 hour of discussion per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructors: Bartolome, Huntsinger

ESPM 187 Restoration Ecology 4 Units
This course covers ecological theories that inform the practice of ecological restoration, with particular focus on local (Bay Area) restoration and linkages with social, political, and economic factors. Laboratories focus on assessment techniques and cumulate with formulation of a restoration management plan. Laboratories will be based at the Richmond Field Station, served by campus shuttle.
Rules & Requirements

Prerequisites: One course in ecology; upper division or graduate standing

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture, 1 hour of fieldwork, and 3 hours of laboratory per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructor: Suding

ESPM 188 Case Histories in Wildlife Management 2 Units
Seminar format with presentation and discussion by each student, with long term paper requirement. Examination in depth of current issues in wildlife management.
Rules & Requirements

Prerequisites: 114

Hours & Format

Fall and/or spring: 15 weeks - 4 hours of seminar per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam not required.

Instructor: Barrett

ESPM 190 Seminar in Environmental Issues 3 Units
Interdisciplinary study of issues for advanced students. Designed to develop skills in critical analysis of specific issues. Different topics will be available each semester reflecting faculty and student interest. Major research project required.
Rules & Requirements

Prerequisites: Upper division standing and consent of instructor

Repeat rules: Course may be repeated for credit. Course may be repeated for credit when topic changes.

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam not required.

ESPM C191 The American Forest: Its Ecology, History, and Representation 4 Units
The American forest will be examined in terms of its ecology, history, and representations in paintings, photographs, and literary essays. This examination seeks to understand the American forest in its scientific and economic parameters, as well as the historic, social, and ideological dimensions which have contributed to the evolution of our present attitudes toward the forest.
Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 1 hour of discussion per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructors: Lovell, McBride

Also listed as: AMERSTD C112F/HISTART C189/UGIS C136

ESPM C192 Molecular Approaches to Environmental Problem Solving 2 Units
Seminar in which students consider how modern biotechnological approaches, including recombinant DNA methods, can be used to recognize and solve problems in the area of conservation, habitat and endangered species preservation, agriculture and environmental pollution. Students will also develop and present case studies of environmental problems solving using modern molecular methods.
Rules & Requirements

Prerequisites: Junior or senior standing in the Genetics and Plant Biology or Microbial Biology major, or consent of instructor

Hours & Format

Fall and/or spring: 15 weeks - 2 hours of lecture per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructor: Lindow

Formerly known as: Environ Sci, Policy, and Management 192

Also listed as: PLANTBI C192

ESPM C193A Environmental Education 3 Units
Theory and practice of translating ecological knowledge, environmental issues, and values into educational forms for all age levels and all facets of society, including schools. Concentrated experience in participatory education.
Hours & Format

Fall and/or spring: 15 weeks - 5.5 hours of lecture and 6 hours of fieldwork per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam required.

Instructor: Hurst

Also listed as: EDUC C193A

ESPM 194 Senior Seminar in Conservation and Resource Studies 2 Units
Seminar in which students synthesize their knowledge, skills, and interests into a holistic perspective. A one-hour oral presentation in the area of interest and a senior thesis synthesizing the area of interest are required. Required final semester for all CRS majors.
Rules & Requirements

Prerequisites: Senior standing in CRS major

Hours & Format

Fall and/or spring: 15 weeks - 2 hours of seminar per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam not required.

ESPM 194A Senior Seminar in Conservation and Resource Studies 2 Units
Seminar in which students synthesize their knowledge, skills, and interests into a holistic perspective. A one-hour oral presentation in the area of interest and a senior thesis synthesizing the area of interest are required. Required final semester for all CRS majors.
Rules & Requirements

Prerequisites: Senior standing in CRS major

Hours & Format

Fall and/or spring: 15 weeks - 2 hours of seminar per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam not required.

ESPM 194B Capstone Course in Society and Environment 1 Unit
Senior capstone project in the student's primary area of concentration and presentation to the ESPM Society and Environment faculty and majors. Required of all graduating seniors in the ESPM and Society and Environment major. Students who have completed ESPM 195, H196, or 197 may substitute that course for ESPM 194B.
Rules & Requirements

Prerequisites: Senior standing in ESPM Society and Environment major

Hours & Format

Fall and/or spring: 8 weeks - 1.5 hours of lecture per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam not required.

ESPM 195 Senior Thesis 3 - 4 Units
Subject must be approved by faculty sponsor during final semester of the junior year and course initiated in the first semester of the senior year. Credit option: Conservation Resource Studies majors who have successfully completed 195 may petition for exemption from 194.
Rules & Requirements

Prerequisites: Senior standing in ESPM major; 3.0 GPA

Hours & Format

Fall and/or spring: 15 weeks - 0 hours of independent study per week

Summer:
6 weeks - 1-5 hours of independent study per week
8 weeks - 1-4 hours of independent study per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam not required.

ESPM H196 Honors Research 4 Units
Supervised independent honors research specific to aspects of environmental science, policy, and management, followed by a written report to department. Submission of no more than 300 words required for approval.
Rules & Requirements

Prerequisites: Open only to upper division Environmental Science, Policy, and Management majors, 3.2 minimum GPA. Eligibility restrictions related to GPA and unit accumulation

Repeat rules: Course may be repeated for a maximum of 8 units.Course may be repeated for a maximum of 8 units.

Hours & Format

Fall and/or spring: 15 weeks - 4 hours of independent study per week

Summer:
6 weeks - 30 hours of independent study per week
8 weeks - 22.5 hours of independent study per week
10 weeks - 18 hours of independent study per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Letter grade. Final exam not required.

ESPM 197 Field Study in Environmental Science, Policy, and Management 1 - 3 Units
Supervised experience in off-campus organizations relevant to specific aspects of environmental science, policy, and management. Regular individual meetings with faculty sponsor and written reports required.
Rules & Requirements

Prerequisites: Upper division standing. Campus and departmental restrictions apply

Repeat rules: Course may be repeated for credit. Course may be repeated for credit when topic changes.

Hours & Format

Fall and/or spring: 15 weeks - 1-3 hours of fieldwork per week

Summer:
6 weeks - 1-5 hours of fieldwork per week
8 weeks - 1-5 hours of fieldwork per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Offered for pass/not pass grade only. Final exam not required.

ESPM 198 Directed Group Studies for Advanced Undergraduates 1 - 3 Units
Group study of special topics in environmental science, policy, and management that are not covered in depth in regular courses in the department.
Rules & Requirements

Prerequisites: Upper division standing; consent of instructor; campus and departmental restrictions apply

Repeat rules: Course may be repeated for credit. Course may be repeated for credit when topic changes.

Hours & Format

Fall and/or spring: 15 weeks - 1-3 hours of directed group study per week

Summer:
6 weeks - 2.5-7.5 hours of directed group study per week
8 weeks - 1.5-5.5 hours of directed group study per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Offered for pass/not pass grade only. Final exam not required.

ESPM 198BC Berkeley Connect 1 Unit
Berkeley Connect is a mentoring program, offered through various academic departments, that helps students build intellectual community. Over the course of a semester, enrolled students participate in regular small-group discussions facilitated by a graduate student mentor (following a faculty-directed curriculum), meet with their graduate student mentor for one-on-one academic advising, attend lectures and panel discussions featuring department faculty and alumni, and go on field trips to campus resources. Students are not required to be declared majors in order to participate.
Rules & Requirements

Repeat rules: Course may be repeated for credit when topic changes.

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Offered for pass/not pass grade only. Final exam not required.

ESPM 199 Supervised Independent Study and Research 1 - 4 Units
Enrollment restrictions apply; see the Courses and Curricula section of this catalog. Supervised independent study and research specific to aspects of environmental science, policy, and management.
Rules & Requirements

Prerequisites: Upper division standing; campus and departmental restrictions apply

Repeat rules: Course may be repeated for credit. Course may be repeated for credit when topic changes.

Hours & Format

Fall and/or spring: 15 weeks - 0 hours of independent study per week

Summer:
6 weeks - 1-5 hours of independent study per week
8 weeks - 1-4 hours of independent study per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Undergraduate

Grading/Final exam status: Offered for pass/not pass grade only. Final exam not required.

ESPM C200 Principles of Phylogenetics 4 Units
The core theory and methodology for comparative biology, beginning with issues in building phylogenetic trees, with emphases on both morphology and molecules, and both living and fossil organisms. Also covers the many applications of phylogenetic trees to systematics, biogeography, speciation, conservation, population genetics, ecology, behavior, development, functional morphology, and macroevolution that have revolutionized those fields. Labs are closely integrated with lectures and cover the major algorithms and computer software used to implement these approaches. Requirements include participation in discussions, two exams, and a term project.
Hours & Format

Fall and/or spring: 15 weeks - 2 hours of lecture and 3 hours of laboratory per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/Graduate

Grading: Letter grade.

Instructors: Ackerly, Mishler, Will

Also listed as: INTEGBI C200

ESPM 201A Research Approaches in Environmental Science, Policy, and Management 3 Units
Research projects and approaches in environmental science, policy, and management. An introduction to the diverse ways environmental problems are researched, comparing the approaches and methods of various disciplines represented among faculty and students. This course is the first of the core course sequence required for all ESPM graduate students.
Rules & Requirements

Prerequisites: Graduate standing in ESPM

Hours & Format

Fall and/or spring: 15 weeks - 2 hours of lecture and 1 hour of seminar per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/Graduate

Grading: Letter grade.

Instructor: Mills

Formerly known as: 200B

ESPM 201C Environmental Forum 1 Unit
Presentation and analysis of current topics in environmental science, policy, and management. This course is required for all ESPM doctoral students.
Rules & Requirements

Prerequisites: Graduate standing in ESPM

Repeat rules: Course may be repeated for credit. Course may be repeated for credit when topic changes.

Hours & Format

Fall and/or spring: 15 weeks - 2 hours of seminar per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Formerly known as: 200C

ESPM 201S Environmental Science, Policy, and Management Colloquium 1 Unit
Seminars for the presentation and discussion of original work by faculty, visiting scholars, and graduate students. Core course for the ESPM graduate program.
Hours & Format

Fall and/or spring: 15 weeks - 1.5 hours of seminar per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

ESPM C204 Research Reviews in Animal Behavior: Behavior Review 1 Unit
This course will provide a rigorous, critical review of current research in animal behavior. Emphases will include hypothesis testing and experimental design, as well as methods of data collection and analysis. Each week, a student in the course will present original research in the form of a seminar presentation, grant proposal, or manuscript. Through discussion with seminar participants, presenters will gain critical feedback regarding their research.
Rules & Requirements

Prerequisites: Graduate standing, basic course in animal behavior. Instructor approval required

Repeat rules: Course may be repeated for credit. Course may be repeated for credit when topic changes.

Hours & Format

Fall and/or spring: 15 weeks - 1.5 hours of seminar per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/Graduate

Grading: Letter grade.

Instructors: Lacey, Caldwell, Bentley, Elias

Also listed as: INTEGBI C204

ESPM 205 Quantitative Methods for Ecological and Environmental Modeling 3 Units
This course will review the background mathematical and statistical tools necessary for students interested in pursuing ecological and environmental modeling. Topics include linear algebra; difference equation, ordinary differential equation, and partial differential equation models; stochastic processes; parameter estimation; and a number of statistical techniques. This course will be recommended as a prerequisite for advanced modeling courses in Integrative Biology, Energy and Resources Group, and Environmental Science, Policy, and Management.
Rules & Requirements

Prerequisites: Consent of instructor

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/Graduate

Grading: Letter grade.

Instructor: Wayne Getz

ESPM C205 Quantitative Methods for Ecological and Environmental Modeling 3 Units
This course will review the background mathematical and statistical tools necessary for students interested in pursuing ecological and environmental modeling. Topics include linear algebra; difference equation, ordinary differential equation, and partial differential equation models; stochastic processes; parameter estimation; and a number of statistical techniques. This course will be recommended as a prerequisite for advanced modeling courses in Integrative Biology, Energy and Resources Group, and Environmental Science, Policy, and Management.
Rules & Requirements

Prerequisites: Consent of instructor

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/Graduate

Grading: Letter grade.

Also listed as: ENE,RES C205/INTEGBI C205

ESPM 206 Animal Communication 2 Units
The objective of the course is to explore major topics in animal communication. Topics each year will focus on a different sensory modality and range from visual, acoustic, and chemical senses. Due to the interdisciplinary nature of the study of communication, over the course of the semester, we will draw on a variety of disciplines (including cell biology, ecology, evolution, genetics, neurophysiology, and physics) to understand the mechanisms, function, and evolution of communication.
Hours & Format

Fall and/or spring: 15 weeks - 2 hours of discussion per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Elias

ESPM 209 Pathogen and Disease Ecology 1 Unit
Study and discussion of current topics in pathogen and disease ecology.
Rules & Requirements

Prerequisites: Graduate standing or consent of instructor

Repeat rules: Course may be repeated for credit. Course may be repeated for credit when topic changes.

Hours & Format

Fall and/or spring: 15 weeks - 1 hour of seminar per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Almeida

ESPM 210 Spatial Data Analysis for Natural Resources 3 Units
An introduction to natural resource spatial data analysis. Topics to be covered include spatial sampling, quadrat analysis, distance methods, spatial point patterns and Ripley's K function, spatial autocorrelation, and geostatistics (Kriging). Readings will cover applications in various natural resource fields as well as general theory.
Rules & Requirements

Prerequisites: One year of upper division probability and statistics, one course in multivariate analysis, or consent of instructor

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/Graduate

Grading: Letter grade.

Instructor: Biging

ESPM C211 Modeling Ecological and Meteorological Phenomena 3 Units
Modeling methods in ecology and meteorology; stability analysis; effects of anthropogenic stress on natural systems. Offered alternate years.
Rules & Requirements

Prerequisites: Integrative Biology 102 or consent of instructor

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/Graduate

Grading: Letter grade.

Instructor: Harte

Also listed as: ENE,RES C202

ESPM 215 Hierarchical Statistical Modeling in Environmental Science 2 Units
Hierarchical statistical models include generalized linear mixed models, generalized additive mixed models, state-space models for time-series data, and random field models for spatial data. Introduction to formulation and analysis of such models with frequentist methods, including maximum likelihood via numerical integration and restricted maximum likelihood, and Bayesian methods, including Markov chain Monte Carlo. Background in relevant probability theory.
Rules & Requirements

Prerequisites: Calculus and experience with common statistical methods such as linear regression, or consent of instructor

Hours & Format

Fall and/or spring: 15 weeks - 2 hours of lecture per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: de Valpine

ESPM C216 Freshwater Ecology 3 Units
This graduate course will combine formal lectures and discussion, with the overall goal of exposing students to general concepts in freshwater ecology. We will discuss a broad range of topics including freshwater environments and biota, natural selection and adaptive evolution, food webs and trophic cascades, cross-ecosystem linkages, and social-ecological resilience of freshwater ecosystems under global change. Upper division undergraduates are welcome, with permission of the instructors.
Hours & Format

Fall and/or spring: 15 weeks - 2 hours of lecture and 1 hour of discussion per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/Graduate

Grading: Letter grade.

Instructors: Carlson, Power

Also listed as: INTEGBI C216

ESPM 217 Political Economy of Climate Change 3 Units
This course examines the comparative and global political economy of climate change, with a focus on the politics of climate change mitigation in the energy sector. Key themes are the choice of policy strategies and policy instruments, industry and climate policy, global institutions and collective action, markets and technological change, and economic and geo-political transformations in response to climate change. The courses combines theoretical readings with in-depth case studies.
Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/Graduate

Grading: Letter grade.

Instructor: Meckling

ESPM C220 Stable Isotope Ecology 5 Units
Course focuses on principles and applications of stable isotope chemistry as applied to the broad science of ecology. Lecture topics include principles of isotope behavior and chemistry, and isotope measurements in the context of terrestrial, aquatic, and marine ecological processes and problems. Students participate in a set of laboratory exercises involving preparation of samples of choice for isotopic analyses, the use of the mass spectrometer and optical analysis systems, and the anlaysis of data.
Rules & Requirements

Prerequisites: Graduate standing

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 3 hours of laboratory per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/Graduate

Grading: Letter grade.

Instructors: Amundson, Dawson, Mambelli

Also listed as: EPS C241/INTEGBI C227

ESPM 222 Surface and Colloid Chemistry of Natural Particles 3 Units
Structure and coordination chemistry of natural adsorbent particles in aqueous systems; solute adsorption mechanisms and theoretical models; interparticle forces and colloidal phenomena; applications to biogeochemistry and contaminant hydrology.
Rules & Requirements

Prerequisites: 126 or consent of instructor

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/Graduate

Grading: Letter grade.

Instructor: Sposito

ESPM C225 Isotopics 2 Units
This seminar will explore current topics that employ the use of stable isotopes. Discussion topics include the areas of biology, paleontology, biogeochemistry, soil science, and atmospheric science. Students will be required to lead at least one discussion of relevant literature in the topic area.
Hours & Format

Fall and/or spring: 10 weeks - 3 hours of seminar per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructors: Amundson, Dawson, Mambelli

Also listed as: INTEGBI C226

ESPM 226 Interdisciplinary Food and Agriculture Studies 3 Units
A graduate seminar exploring the ecological, social, and economic risks inherent in different forms of agriculture, from highly diversified, agroecological farming systems to industrialized agriculture.
We will examine how different farm management techniques, government policies, supply chains, R&D, technology, and science may influence various risks and uncertainties, including climate change, agrobiodiversity, farmer livelihoods, food safety, public health, and nutrition.
Rules & Requirements

Prerequisites: Consent of instructor

Repeat rules: Course may be repeated for credit. Course may be repeated for credit when topic changes.

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of seminar per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/Graduate

Grading: Letter grade.

Instructors: Iles, Kremen

ESPM 227 Science Communication 2 Units
Effective communication is an important skill that all scientists should master. There are many different forms of communication, and these require different approaches and techniques. The goal of this course is to provide students with the skills to communicate scientific findings to a wide range of audiences. We will discuss approaches to communicating our findings and those of others to other scientists, the public, and the media. We will then prepare and practice communicating through papers, proposals, presentations, sound bites, and podcasts. Exercises and assignments are designed to give students hands on experience developing their own stories and packaging them to selected audiences.
Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructor: Silver

ESPM 228 Advanced Topics in Biometeorology and Micrometeorology 2 Units
Measurement and modeling of trace gases and energy between the terrestrial biosphere and atmosphere. Micrometeorological flux measurement methods, including eddy covariance, profile, and eddy accumulation methods. A hierarchy of biophysical models are discussed for interpreting flux measurements. Information and theory on big-leaf, two-layer, and multi-layer models that couple energy, water, and carbon to predict trace gas fluxes are presented. How models integrate information from leaf to canopy to landscape scales is discussed.
Rules & Requirements

Prerequisites: C129 or consent of instructor

Hours & Format

Fall and/or spring: 15 weeks - 2 hours of lecture per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/Graduate

Grading: Letter grade.

Instructor: Baldocchi

ESPM 230 Sociology of Agriculture 4 Units
This graduate seminar explores the sociology of agriculture and food systems, addressing key theories and topics in the field. We begin with the antecedents of the sociology of agriculture, including foundation classical agrarian theories and an overview of the field, followed by topics ranging from pesticide drift to agricultural labor injustice to food sovereignty movements and more. This course is most appropriate for students with some background in agri-food and social systems.
Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 1 hour of discussion per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/Graduate

Grading: Letter grade.

Instructor: De Master

ESPM 233 Geographic Information Systems for Environmental Science and Management 3 Units
The objectives of the course are to: 1) review the GIS basics (data, analysis, and product generation) with special reference to data used in managing California environments; 2) understand the issues surrounding, and algorithms used in, a particular GIS application; and 3) develop an operational GIS project in a chosen area. This course is divided into three sections: 1) an intensive GIS fundamentals section covering geospatial data input, manipulation, analysis, and effective communication using common geospatial data from California sources; 2) a section that discusses linkages with other GIScience disciplines; 3) a topic based case-study portion; and 4) a project development phase. Topics will need to have management appplicability for an agency, not-for-profit, or similar type of group involved in environmental management. There will be lectures and labs throughout the class, although lab time nearer the end of class will be focused on class projects. Reading will be assigned throughout, and class discussion held. The final class period will be used as an "illustrated paper" session, in which final projects are displayed and discussed.
Rules & Requirements

Prerequisites: Introduction to Geographic Information Systems (GIS)

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 4 hours of laboratory per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/Graduate

Grading: Letter grade.

Instructor: Kelly

ESPM C234 Green Chemistry: An Interdisciplonary Approach to Sustainability 3 Units
Meeting the challenge of global sustainability will require interdisciplinary approaches to research and education, as well as the integration of this new knowledge into society, policymaking, and business. Green Chemistry is an intellectual framework created to meet these challenges and guide technological development. It encourages the design and production of safer and more sustainable chemicals and products.
Rules & Requirements

Prerequisites: One year of chemistry, including a semester of organic chemistry, or consent of instructors based on previous experience

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Summer: 6 weeks - 20 hours of lecture per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/Graduate

Grading: Letter grade.

Instructors: Arnold, Bergman, Guth, Iles, Kokai, Mulvihill, Schwarzman, Wilson

Also listed as: CHEM C234/PB HLTH C234

ESPM 249 Bioethics, Law, and the Life Sciences 3 Units
Developments in biotechnology and the life sciences are unsettling legal and policy approaches to intellectual property, reproduction, health care, medical research, and the criminal justice system. Through reading primary materials and relevant secondary sources, this course investigates ethical, legal, and policy problems associated with these developments, and explores possible solutions.
Hours & Format

Fall and/or spring: 15 weeks - 3 hours of seminar per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/Graduate

Grading: Letter grade.

Instructor: Winickoff

ESPM 250 Environmental History 4 Units
A critical survey of classical and recent literature in the field of environmental history, philosophy, and ethics, with special emphasis on the American environment. Topics will include environmental historiography, theories of environmental history, and the relationships between environmental history, philosophy, ethics, ecology, and policy.
Rules & Requirements

Prerequisites: Upper division course in history or history of science or a social science

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/Graduate

Grading: Letter grade.

Instructor: Merchant

ESPM 251 International Conservation and Development Policy 3 Units
Changes in Third World rural economy, ecology, and environment and ways in which these are affected by development policies. Historical dimensions of Third World environmental problems. Changing patterns of rural production (especially food) and resource use; alternative theories of natural resource and socioeconomic development; linkages between socioeconomy and environment in agrarian change and development policy; technology and resource control; conservation and development problems.
Rules & Requirements

Prerequisites: One upper division course in international development

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/Graduate

Grading: Letter grade.

Instructor: Carr

ESPM C252 Topics in Science and Technology Studies 3 Units
This course provides a strong foundation for graduate work in STS, a multidisciplinary field with a signature capacity to rethink the relationship among science, technology, and political and social life. From climate change to population genomics, access to medicines and the impact of new media, the problems of our time are simultaneously scientific and social, technological and political, ethical and economic.
Rules & Requirements

Repeat rules: Course may be repeated for credit. Course may be repeated for credit when topic changes.

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of seminar per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/Graduate

Grading: Letter grade.

Also listed as: ANTHRO C254/HISTORY C250/STS C200

ESPM 253 Advanced Readings in Political Ecology 4 Units
Critique and comparison of literature in political ecology--an approach to sociological analysis of environmental change focusing on environmental conflict. Initial sessions address the definition of political ecology, its origins, and the politics and discourses of natural resource management. Literature includes domestic and international research involving the combination of social and environmental history, local perspectives, and political economy to discuss accounts of social and environmental change.
Rules & Requirements

Prerequisites: Consent of instructor; significant background in social theory

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of seminar per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/Graduate

Grading: Letter grade.

Instructor: Peluso

ESPM C254 Ethnic and Cultural Diversity in Health Status 3 Units
Focus on ethnic and cultural diversity in health behavior as a basis for public health programs. Consideration of U.S. ethnic minority groups and cultural groups in non-Western societies. Health status and behavior examined in context of relevant social and anthropological theory (social class, acculturation, political economy). Influence of socio-cultural background on concepts of health, illness, and health-seeking behavior. Implications for planning public health programs and policies.
Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/Graduate

Grading: Letter grade.

Instructor: Morello-Frosch

Also listed as: PB HLTH C202B

ESPM C255 Seminar in Sociology of Forest and Wildland Resources 3 Units
Individual projects and group discussions concerning social constraints to, and effects of, natural resource planning and management. Application of sociological theories to problems of managing wildland ecosystems. Students will examine topics of individual interest related to the management of wildland uses. Enrollment limited.
Rules & Requirements

Prerequisites: Consent of instructor

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/Graduate

Grading: Letter grade.

Instructor: Fortmann

Also listed as: GEOG C250

ESPM 256 Science, Technology, and the Politics of Nature 3 Units
This course will introduce the methods and theories of Science and Technology Studies (STS) in order to explore the relationships among science, technology, law, and politics in the domains of environment and health. The course will focus some attention on the tension between technocracy and democracy in science policy, and on the role of biotechnology in reshaping the natural and political order. The course will equip graduate students in the social sciences, law, life sciences, and public policy with theoretical and practical tools for analyzing complex problems at the science, technology, and society interface.
Hours & Format

Fall and/or spring: 15 weeks - 3 hours of seminar per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/Graduate

Grading: Letter grade.

Instructor: Winickoff

ESPM 258 Race, Science, and Resource Policy 3 Units
This course addresses explantation and strategy in natural resource policy with an emphasis on whether, why, and how (a) 'race' distributes access to and control of environmental resources, (b) 'science' creates and arrays perceptions, organization and control of these resources, and (c) public policy shapes racial disparities in natural resource opportunities. Topics are drawn primarily from issues in metropolitan, agricultural, and public resource systems.
Rules & Requirements

Repeat rules: Course may be repeated for credit when topic changes.

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/Graduate

Grading: Letter grade.

Instructor: Romm

Formerly known as: 214

ESPM 259 Transnational Environmental Politics and Movements 3 Units
Contemporary issues in international environmental politics; impacts of globalization on the environment; comparative transnational environmental movements. Study of current and historical texts. Case studies drawn from around the world with a focus on methods and research techniques.
Rules & Requirements

Prerequisites: Upper division course in environmental policy or social science

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 1 hour of discussion per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/Graduate

Grading: Letter grade.

Instructor: O'Neill

ESPM 260 Governance of Global Production 3 Units
This course explores critical policy and theoretical questions in the governance of global production. Current trends in the restructuring of industrial production; distributions of environmental, labor, and social impacts from this production; and new strategies for democratic governance are analyzed, including corporate self-regulation, monitoring, certification and labeling, fair trade programs, legal strategies, and international accords and agreements.
Hours & Format

Fall and/or spring: 15 weeks - 3 hours of seminar per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/Graduate

Grading: Letter grade.

Instructor: O'Rourke

ESPM 261 Sustainability and Society 3 Units
Science-based technologies that are central to the search for sustainability in contemporary societies and their environmental impacts. Theoretical approaches to investigating how science, technology, and environment intersect. How societies move closer to sustainable technological systems. Redesign of existing technologies and the introduction of new technologies. How adverse impacts can be prevented through policy. Case studies of contemporary developments.
Rules & Requirements

Prerequisites: Graduate standing or consent of instructor

Hours & Format

Fall and/or spring: 15 weeks - 2 hours of lecture per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/Graduate

Grading: Letter grade.

Instructor: Iles

ESPM 262 Race, Identity, and the Environment 3 Units
Advanced readings on environment and race. Shifting meanings of "race" and its application and usefulness in theorizing human-environment relationships. Foundations of environmental ideas and attitudes towards the natural environment and their connections to contemporary environmental practices. Construction of environmental narratives and images in defining ideas of racial and place identity. How representations of the natural environment are structurally and culturally racialized within environmental institutions and the media. Post-race possibilities.
Rules & Requirements

Prerequisites: Graduate standing or consent of instructor

Hours & Format

Fall and/or spring: 15 weeks - 2 hours of lecture per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/Graduate

Grading: Letter grade.

Instructor: Finney

ESPM 263 Indigenous, Feminist, and Postcolonial Approaches to Science, Technology, and Environment 4 Units
This seminar presents material from indigenous studies; feminist and postcolonial science and technology studies (STS), including animal studies; political ecology; and other fields. It engages non-dominant knowledges while interrogating the role of key technoscientific concepts (modernity, objectivity, universality) in colonizations of both humans and nonhumans. This course highlights the role of critical methods in shifting power relations in research, including students' own research.
Hours & Format

Fall and/or spring: 15 weeks - 3 hours of seminar per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/Graduate

Grading: Letter grade.

Instructor: TallBear

ESPM 264 Silviculture Seminar 1 Unit
A seminar covering various aspects of silviculture and related issues.
Rules & Requirements

Prerequisites: 185 or consent of instructor

Repeat rules: Course may be repeated for credit. Course may be repeated for credit when topic changes.

Hours & Format

Fall and/or spring: 15 weeks - 2 hours of seminar per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/Graduate

Grading: Letter grade.

Instructor: O'Hara

ESPM 265 Seminar on Fire as an Ecological Factor 2 Units
Effect of fire on ecology of forest and rangeland.
Rules & Requirements

Repeat rules: Course may be repeated for credit. Course may be repeated for credit when topic changes.

Hours & Format

Fall and/or spring: 15 weeks - 2 hours of lecture per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/Graduate

Grading: Letter grade.

Instructor: Stephens

ESPM 268 Seminar in Range Ecology 2 Units
A seminar course dealing with selected topics in ecology of rangelands.
Rules & Requirements

Prerequisites: Consent of instructor

Repeat rules: Course may be repeated for credit. Course may be repeated for credit when topic changes.

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of seminar per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/Graduate

Grading: Letter grade.

ESPM 271 Advanced Remote Sensing of Natural Resources 3 Units
Advanced photographic systems. Nonphotographic systems including multispectral scanner, imaging spectrometry, thermal, and RADAR. The use of ditigal image processing, geographic information systems (GIS,) and accuracy assessment. A look into linking remote sensing with GIS and integrated analysis of multisource spatial data. Laboratories and application projects are to be arranged.
Rules & Requirements

Prerequisites: 172, Statistics 20, or consent of instructor

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/Graduate

Grading: Letter grade.

Instructor: Gong

ESPM C273 Science and Technology Studies Research Seminar 3 Units
This course will cover methods and approaches for students considering professionalizing in the field of STS, including a chance for students to workshop written work.
Rules & Requirements

Repeat rules: Course may be repeated for credit. Course may be repeated for credit when topic changes.

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of seminar per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Also listed as: ANTHRO C273/HISTORY C251/STS C250

ESPM 276 Advanced Silviculture 2 Units
Advanced topics related to the dynamics and management of forest stands such as competition effects, mixed-species interactions, mutiaged stand silviculture, pruning, thinning regimes, management for old growth features, wood quality effects, and others. Field trips may be included.
Rules & Requirements

Prerequisites: 185 or equivalent

Hours & Format

Fall and/or spring: 15 weeks - 2 hours of lecture per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/Graduate

Grading: Letter grade.

Instructor: O'Hara

ESPM 277 Advanced Topics in Conservation Biology 3 Units
A graduate level seminar covering advanced topics in conservation of biodiversity, focused on designing protected area networks. We will first lay the groundwork for the course by exploring the fundamental papers in ecology and conservation biology that led to systematic conservation planning. Then, we will study various issues at the current frontiers of the discipline, such as incorporating threats, costs, evolutionary processes, and ecosystem services into reserve network design. The class will encourage student engagement through discussions, peer instruction and peer review of essays.
Rules & Requirements

Prerequisites: Undergraduate courses in ecology, population biology, or conservation biology

Repeat rules: Course may be repeated for credit when topic changes.

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture and 2 hours of discussion per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/Graduate

Grading: Letter grade.

Instructor: Kremen

ESPM 278 Range Assessment 3 Units
Rangeland vegetation sampling techniques with emphasis on comparing the relative efficiency of different techniques of vegetation measurement. Includes weekly lab exercises on artificial sampling boards and/or in the field. Juniors and seniors are encouraged.
Rules & Requirements

Prerequisites: 186 and one semester of statistics

Hours & Format

Fall and/or spring: 15 weeks - 2 hours of lecture and 3 hours of laboratory per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/Graduate

Grading: Letter grade.

Instructor: Allen-Diaz

ESPM 279 Seminar on Pastoralism 3 Units
A survey of pastoral animal management and production systems, as they influence and are influenced by the rangeland environment. Review of the evolution of animal management practices; contemporary management systems in California,the West, and worldwide; and production systems with both traditional and nontraditional goals. Examination of agroforestry and nomadic and transhumant grazing systems, sheep and cattle production, game ranching, and organic meat production will be included.
Rules & Requirements

Prerequisites: Consent of instructor

Hours & Format

Fall and/or spring: 15 weeks - 2 hours of lecture per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/Graduate

Grading: Letter grade.

Instructor: Huntsinger

ESPM 280 Seminar in Range Ecosystem Planning and Policy 3 Units
A seminar course dealing with selected current topics in range ecosystem planning and policy.
Rules & Requirements

Prerequisites: Consent of instructor

Repeat rules: Course may be repeated for credit. Course may be repeated for credit when topic changes.

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/Graduate

Grading: Letter grade.

Instructor: Bartolome

ESPM 281 Seminar in Wildlife Biology and Management 2 Units
Reading, conference, and discussion. Reports and discussion of recent studies in wildlife biology and management. Open to qualified graduate students from other departments.
Rules & Requirements

Prerequisites: 114 and 187

Repeat rules: Course may be repeated for credit. Course may be repeated for credit when topic changes.

Hours & Format

Fall and/or spring: 15 weeks - 2 hours of lecture per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/Graduate

Grading: Letter grade.

ESPM C282 Health Implications of Climate Change 3 Units
The course will provide a basic foundation in the physical mechanisms of, responses to, and health implications of climate change. We will explore the variety of epidemiologic, risk assessment, and statistical methods used to understand the impacts of climate change on health across diverse demographic groups. The public health implications, positive and negative, of efforts to mitigate and adapt to climate change will be elaborated, including discussions of ethical, political, and economic aspects of these efforts. Students will be responsible for leading class discussions and presenting a poster on their choice of a topic related to climate change and health.
Rules & Requirements

Prerequisites: The material will be presented with minimal expectation of a background in physical science, although some additional reading may be needed for students with no university science courses. A background in epidemiology is also helpful, but not necessary

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/Graduate

Grading: Letter grade.

Instructors: Jerrett, Morello-Frosch

Also listed as: PB HLTH C271G

ESPM 284 Demographic Methods for Population Viability Analysis 3 Units
Application of demographic methods to the management of plant and animal populations. Conservation problems faced by small populations of threatened or exploited species will be emphasized. Implications for life-history theory will also be discussed. Demographic analyses include (1) an understanding of life cycle diagrams, projection matrices, and age- and stage-based approaches; (2) calculation of population growth rate and sensitivity of demographic parameters to perturbation; and (3) advanced tehcniques of stochastic simulation modeling, spatial analyses, and population viability analyses will be learned.
Rules & Requirements

Prerequisites: Graduate standing or consent of instructor

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/Graduate

Grading: Letter grade.

Instructor: Beissinger

ESPM 290 Special Topics in Environmental Science, Policy, and Management 1 - 4 Units
Study and critical analysis of topics, research, and texts pertinent to environmental science, policy, and management. Different topics will be available each semester reflecting faculty and student interest.
Rules & Requirements

Prerequisites: Graduate standing or consent of instructor

Repeat rules: Course may be repeated for credit. Course may be repeated for credit when topic changes.

Hours & Format

Fall and/or spring: 15 weeks - 1 hour of seminar per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/Graduate

Grading: Letter grade.

ESPM 296 Individual Study 1 - 7 Units
Individual study in consultation with a member of the faculty directed to analysis and synthesis of the literature of a specialized subject area in forestry and resource management.
Rules & Requirements

Repeat rules: Course may be repeated for credit. Course may be repeated for credit when topic changes.

Hours & Format

Fall and/or spring: 15 weeks - 1-7 hours of independent study per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

ESPM 298 Directed Group Study 1 - 6 Units
Advanced study of research topics which vary each semester.
Rules & Requirements

Prerequisites: Consent of instructor

Repeat rules: Course may be repeated for credit. Course may be repeated for credit when topic changes.

Hours & Format

Fall and/or spring: 15 weeks - 4-24 hours of directed group study per week

Summer:
6 weeks - 10-60 hours of directed group study per week
8 weeks - 7.5-45 hours of directed group study per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/Graduate

Grading: The grading option will be decided by the instructor when the class is offered.

ESPM 299 Individual Research 1 - 12 Units
Individual research under the supervision of a faculty member.
Rules & Requirements

Prerequisites: Consent of instructor

Repeat rules: Course may be repeated for credit. Course may be repeated for credit when topic changes.

Hours & Format

Fall and/or spring: 15 weeks - 0 hours of independent study per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

ESPM N299 Individual Research 1 - 8 Units
Individual research under the supervision of a faculty member.
Rules & Requirements

Prerequisites: Consent of instructor

Repeat rules: Course may be repeated for credit. Course may be repeated for credit when topic changes.

Hours & Format

Summer:
6 weeks - 2.5-20 hours of independent study per week
8 weeks - 1.5-15 hours of independent study per week
10 weeks - 1.5-12 hours of independent study per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/Graduate

Grading: Offered for satisfactory/unsatisfactory grade only.

Formerly known as: Entomological Sciences 299, Forestry and Resource Management 299, Plant Pathology 299, and Soil Science 299

ESPM 300 Supervised Teaching in Environmental Science, Policy, and Management 1 - 6 Units
Teaching methods at the University level; course content; problem set review and development; guidance of laboratory experiments; course development and evaluation; supervised practice teaching.
Rules & Requirements

Prerequisites: Consent of instructor and appointment as graduate student instructor

Repeat rules: Course may be repeated for credit. Course may be repeated for credit when topic changes.

Hours & Format

Fall and/or spring: 15 weeks - 0 hours of independent study per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Professional course for teachers or prospective teachers

Grading: Offered for satisfactory/unsatisfactory grade only.

ESPM C302 Effective Scientific Communication 3 Units
This course will introduce methods of organizing and delivering oral presentations, initating and organizing manuscripts, and utilizing digital communication methods, such as web-based media. Students will develop effective communication techniques through in-class experience. This class will have an emphasis on the sciences but will be useful and open to graduate students of all disciplines.
Hours & Format

Fall and/or spring: 15 weeks - 2 hours of seminar per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Professional course for teachers or prospective teachers

Grading: Letter grade.

Instructors: Resh, Rhew

Also listed as: GEOG C302

ESPM 375 Professional Preparation: Teaching in Environmental Science, Policy, and Management 2 Units
The course will consist of readings and discussions led by instructors, graduate students, and guest speakers covering topics on developing teaching skills relevant to an interdisciplinary environmental science program. Students will present brief lectures that will be taped and evaluated and will learn skills for evaluating success in conveying complex ideas to their own students.
Hours & Format

Fall and/or spring: 15 weeks - 7.5 hours of lecture per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/ Professional course for teachers or prospective teachers

Grading: Offered for satisfactory/unsatisfactory grade only.

Instructors: Fairfax, Resh

Formerly known as: Environmental Science, Policy, and Management 301

ESPM 400 Professional Training in Research 1 - 6 Units
Training for students in planning and performing research under the supervision of a faculty member. This course is intended to provide credit for experience obtained.
Rules & Requirements

Prerequisites: Consent of instructor and appointment as graduate student researcher

Credit Restrictions: Course does not satisfy unit or residence requirements.

Repeat rules: Course may be repeated for credit. Course may be repeated for credit when topic changes.

Hours & Format

Fall and/or spring: 15 weeks - 0 hours of independent study per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/Other professional

Grading: Offered for satisfactory/unsatisfactory grade only.

ESPM 601 Individual Study for Master's Students 1 - 8 Units
Individual study for the comprehensive examination in consultation with the field adviser.
Rules & Requirements

Prerequisites: Consent of instructor

Credit Restrictions: Course does not satisfy unit or residence requirements for master's degree.

Repeat rules: Course may be repeated for credit. Course may be repeated for credit when topic changes.

Hours & Format

Fall and/or spring: 15 weeks - 0 hours of independent study per week

Summer:
6 weeks - 1-5 hours of independent study per week
8 weeks - 1-4 hours of independent study per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/Graduate examination preparation

Grading: Offered for satisfactory/unsatisfactory grade only.

ESPM 602 Individual Study for Doctoral Students 1 - 8 Units
Individual study in consultation with the major field adviser, intended to provide an opportunity for qualified students to prepare themselves for the various examinations required of candidates for the Ph.D.
Rules & Requirements

Prerequisites: Consent of instructor

Repeat rules: May not be used for residence requirements for the doctoral degree. Course may be repeated for credit. Course may be repeated for credit when topic changes.

Hours & Format

Fall and/or spring: 15 weeks - 0 hours of independent study per week

Summer:
6 weeks - 1-5 hours of independent study per week
8 weeks - 1-4 hours of independent study per week

Additional Details

Subject/Course Level: Environ Sci, Policy, and Management/Graduate examination preparation

Grading: Offered for satisfactory/unsatisfactory grade only.