Environmental Science, Policy and Management

Overview

The Environmental Science, Policy, and Management (ESPM) Graduate Program provides a wealth of opportunities for students interested in careers in academia, government, and non-governmental agencies worldwide. Our faculty are internationally recognized, and ESPM is the campus hub for connections to other renowned Berkeley programs in the environment such as the Energy and Resources Group, Agricultural and Resource Economics, Goldman School of Public Policy, Integrative Biology, Berkeley Natural History Museums, and Berkeley Law. The Berkeley campus maintains close ties to world-class research facilities at the Lawrence Berkeley National Laboratory, U.S. Geological Survey, California Academy of Sciences, Stanford University, and many other institutions. Students admitted to our program work with their research mentor to select courses, individualize their training, and conduct research projects that meet their interests and goals. Our core graduate courses provide an introduction to the wide breadth and deep expertise of research on the environment within our department and help students apply for funding opportunities early in their graduate program.

The PhD program is the main graduate program in ESPM for students entering with or without previous masters degrees, though we also offer limited numbers of MS degrees in our specialized Master of Range Management and Master of Forestry programs. The goal of the program is to provide both a strong disciplinary education and broadly based experience in cross-disciplinary communication and problem solving. To achieve this, the program leading to the PhD in environmental science, policy, and management requires that students complete three core courses and take additional coursework in the following three areas: area of specialization, research skills, and experiential breadth.

Disciplinary Emphasis

The disciplinary emphasis is the broadest academic area encompassing the student's interests. The three disciplinary emphases within the department are Ecosystem Sciences, Organisms & Environment, and Society & Environment. A student pursuing a strongly interdisciplinary program may study more than one of these disciplines in depth. Specific coursework within each field will be chosen by the guiding committee in conjunction with the student and approved by the graduate mentor.

Area of Specialization

The area of specialization is a narrower field within the context of the disciplinary emphasis. Some examples of these areas are microbial community ecology, ecosystem function, arthropod population and community ecology, biological control of arthropods, arthropod biodiversity science, American environmental history and policy, international forest management, biogeochemistry, Mediterranean grassland ecosystems, remote sensing, and forest management, to name a few.

Application

Prospective graduate students are encouraged to contact a potential PhD mentor directly prior to the application deadline. If possible, prospective graduate students should plan to visit the campus, department, and graduate program. As part of their application, each student will be asked to identify one of the three disciplinary emphases (ecosystem sciences, organisms & environment, and society & environment) most closely associated with her/his interests. If you have questions about which emphasis to choose, please ask your prospective mentor. It is not uncommon for students in ESPM to be co-mentored by two professors, often with different disciplinary emphases. The area of specialization is determined after entry into the program, in consultation with the guiding committee and PhD mentor.

Environmental Science, Policy and Management

ESPM 2 The Biosphere 3 Units

Terms offered: Fall 2024, Fall 2023, Fall 2022
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 5 FROM FARM TO TABLE: FOOD SYSTEMS IN A CHANGING WORLD 4 Units

Terms offered: Summer 2021 Second 6 Week Session, Summer 2020 Second 6 Week Session, Summer 2019 Second 6 Week Session
This course explores the journey of the U.S. food supply from the farm to the family table. The ecology, management, and politics of farming under a global change scenario, the impact of our changing patterns of demand on food processing and retail, the opportunties and costs of exports, and the way different groups access, use, and consume food.
Hours & Format

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.

Instructors: Huntinger, Iles, DeMaster

ESPM 6 Environmental Biology 3 Units

Terms offered: Fall 2025, Fall 2024, Fall 2023
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 C10 Environmental Issues 4 Units

Terms offered: Spring 2025, Spring 2024, Spring 2023, Spring 2022
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

Terms offered: Spring 2017, Spring 2015, Spring 2014
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 15 Introduction to Environmental Sciences 3 Units

Terms offered: Fall 2025, Spring 2025, Fall 2024
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

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.

Instructors: Goldstein, Potts, Fung

ESPM C22AC Fire: Past, Present and Future Interactions with the People and Ecosystems of California 4 Units

Terms offered: Spring 2025, Spring 2024, Fall 2022, Fall 2021
The course presents a diachronic perspective on human-fire interactions with local ecosystems in California that spans over 10,000 years. The course will provide an historical perspective on human-fire interactions at the landscape scale using a diverse range of data sources drawn from the fields of fire ecology, biology, history, anthropology, and archaeology. An important component includes examining how diverse cultures and ethnicity influenced how people perceived and used fire at the landscape scale in ancient, historical and modern times. The implications of these diverse fire practices and policies will be analyzed and the consequences they have had for transforming habitats and propagating catastrophic fires will be explored.

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: Stephens, Lightfoot, Nelson

Also listed as: ANTHRO C12AC/NATAMST C22AC

ESPM 24 Freshman Seminar 1 Unit

Terms offered: Spring 2024, Spring 2023, Spring 2022
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 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 To be decided by the instructor when the class is offered.

ESPM 40 Insects and Human Society 3 Units

Terms offered: Spring 2025, Spring 2024, Spring 2023
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 and 1 hour of discussion per week

Summer: 8 weeks - 4 hours of lecture and 4 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.

Instructors: Will, Almeida

ESPM 42 Natural History of Insects 3 Units

Terms offered: Fall 2025, Fall 2024, Fall 2023
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 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: Will

ESPM 44 Biological Control 2 Units

Terms offered: Fall 2014, Fall 2013, Fall 2012
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

Terms offered: Spring 2025, Spring 2023, Spring 2022, Spring 2021
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

Terms offered: Fall 2025, Summer 2025 First 6 Week Session, Summer 2025 Second 6 Week Session
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 52 History of Native American Land, Colonialism, and Heritage Preservation 3 Units

Terms offered: Spring 2022
The purpose of this course is to examine Native American societies, political systems, and human-environment relationships within CA and the U.S. This survey of Native American history will provide context for modern issues in land and resource management and government-to-government relationships between tribes and local, state, and federal agencies. Special attention will be given to the CA region, as there are many aspects of CA that make it an exceptional or unique case within the larger US historical narrative. Recurring themes or core concepts discussed throughout the course will include climate change, cultural and environmental impacts from colonialism,Indigenous persistence, stewardship, cultural landscapes, and tribal sovereignty.
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: Nelson

ESPM C52 History of Native American Land, Colonialism, and Heritage Preservation 3 Units

Terms offered: Spring 2023
The purpose of this course is to examine Native American societies, political systems, and human-environment relationships within CA and the U.S. This survey of Native American history will provide context for modern issues in land and resource management and government-to-government relationships between tribes and local, state, and federal agencies. Special attention will be given to the CA region, as there are many aspects of CA that make it an exceptional or unique case within the larger US historical narrative. Recurring themes or core concepts discussed throughout the course will include climate change, cultural and environmental impacts from colonialism,Indigenous persistence, stewardship, cultural landscapes, and tribal sovereignty.
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: Nelson

Also listed as: NATAMST C52

ESPM 60 Environmental Policy, Administration, and Law 4 Units

Terms offered: Spring 2025, Fall 2024, Spring 2024
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

Summer: 6 weeks - 8 hours of lecture and 3 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 72 Introduction to Geographic Information Systems 3 Units

Terms offered: Spring 2025, Spring 2024, Summer 2023 First 6 Week Session
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

Summer: 6 weeks - 6.5 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: Gong

ESPM 88A Exploring Geospatial Data 2 Units

Terms offered: Spring 2017, Spring 2016
From interactive web maps to spatial data analysis, digital geographic data and information are becoming an important part of the data science landscape. Almost everything happens somewhere that can be mapped on the surface of the earth. In many cases the where matters as much to an analysis as the what and the why. Geospatial data analysis allows a researcher to consider location explicitly. This course provides an introduction to working with digital geographic data, or geospatial data. We will explore concepts of geospatial data representation, methods for acquisition, processing and analysis, and techniques for creating compelling geovisualizations. No prior knowledge is assumed or expected.

Rules & Requirements

Prerequisites: This course is meant to be taken concurrently with Computer Science C8/Statistics C8/Information C8: Foundations of Data Science. Students may take more than one 88 (data science connector) course if they wish, ideally concurrent with or after having taken the C8 course

Hours & Format

Fall and/or spring: 15 weeks - 0.5 hours of lecture, 0.5 hours of discussion, and 1 hour 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.

Instructor: Kelly

ESPM 88B Data Sciences in Ecology and the Environment 2 Units

Terms offered: Spring 2016
Many of the greatest challenges we face today come from understanding and interacting with the natural world: from global climate change to the sudden collapse of fisheries and forests, from the spread of disease and invasive species to the unknown wealth of medical, cultural, and technological value we derive from nature. Advances in satellites and microsensors, computation, informatics and the Internet have made available unprecedented amounts of data about the natural world, and with it, new challenges of sifting, processing and synthesizing large and diverse sources of information. In this course, students will apply methods and understanding they gain in the Foundations course to realworld ecological and environmental data

Rules & Requirements

Prerequisites: This course is meant to be taken concurrently with Computer Science C8/Statistics C8/Information C8: Foundations of Data Science. Students may take more than one 88 (data science connector) course if they wish, ideally concurrent with or after having taken the C8 course

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. Alternative to final exam.

Instructor: Boettiger

ESPM 90 Introduction to Conservation and Resource Studies Major 2 Units

Terms offered: Fall 2025, Spring 2025, Fall 2024
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: 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.

Instructors: Ignacio Chapela, Gordon Frankie

ESPM 98 Directed Group Study in ESPM 1 - 3 Units

Terms offered: Summer 2025 Second 6 Week Session, Spring 2025, Fall 2024
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 without restriction.

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

Terms offered: Fall 2025, Fall 2024, Fall 2023
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 without restriction.

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

Terms offered: Spring 2021, Fall 2016, Spring 2016
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 without restriction.

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

Terms offered: Fall 2025, Fall 2024, Fall 2023
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

Terms offered: Spring 2025, Spring 2024, Spring 2023
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 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.

Instructor: Battles

ESPM 101A The Politics and Practice of Sustainability Transitions 4 Units

Terms offered: Fall 2025, Fall 2024, Fall 2023
Human societies have significant knowledge about environmental and social problems, such as climate change, biodiversity loss, and chemical pollution, as well as the underlying causes. We have a growing sense of what could be done to make societies more sustainable and just. Yet there appear to be many obstacles and much inertia in progressing towards implementing deeper changes in complex social and economic systems, from the food system to chemical manufacturing to urban transportation. This course explores sustainability transitions as a way to work through the politics and practice of making significant changes in societies, economies, and political institutions.

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. Alternative to final exam.

Instructor: Iles

ESPM 102B Natural Resource Sampling 2 Units

Terms offered: Spring 2025, Spring 2024, Fall 2019
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

Terms offered: Spring 2025, Spring 2024, Fall 2019
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 3 Units

Terms offered: Spring 2025, Spring 2024, Spring 2023
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 - 2 hours of lecture and 2 hours of laboratory per week

Summer: 6 weeks - 5 hours of lecture and 5 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

Terms offered: Spring 2024, Spring 2023, Spring 2022
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: One of the following is required: - ESPM 60 Environmental Policy, Administration, and Law - ENVECON C1 Introduction to Environmental Economics and Policy, - POL SCI 1 Introduction to American Politics, or - Consent of instructor

Hours & Format

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

Summer: 6 weeks - 8 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.

Instructor: Meckling

ESPM C103 Principles of Conservation Biology 4 Units

Terms offered: Fall 2025, Fall 2024, Fall 2022
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

Summer: 6 weeks - 6.5 hours of lecture and 3 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

Formerly known as: Integrative Biology C156, Environ Sci, Policy, and Management C103

Also listed as: INTEGBI C156

ESPM C104 Modeling and Management of Biological Resources 4 Units

Terms offered: Fall 2018, Fall 2017, Fall 2015, Fall 2014
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

Summer: 6 weeks - 6.5 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: Getz

Also listed as: ENVECON C115

ESPM 105A Sierra Nevada Ecology 4 Units

Terms offered: Summer 2025 First 6 Week Session, Summer 2024 10 Week Session, Summer 2023 10 Week Session
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

Terms offered: Summer 2025 First 6 Week Session, Summer 2024 10 Week Session, Summer 2023 10 Week Session

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

Terms offered: Summer 2025 First 6 Week Session, Summer 2024 10 Week Session, Summer 2023 10 Week Session

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

Terms offered: Summer 2025 First 6 Week Session, Summer 2024 10 Week Session, Summer 2023 10 Week Session

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

Terms offered: Fall 2025, Fall 2024, Fall 2023

(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: Management and Policy in the 21st Century 3 Units

Terms offered: Spring 2025, Spring 2024, Spring 2022
This course will introduce the history of key wildlife management and policy paradigms, such as parks and protected areas, threatened and endangered species protections, and state wildlife management. We will then explore in depth a number of species case studies in the Greater Yellowstone Ecosystem, a major laboratory for wildlife science, management and policy. The course will draw on lectures, readings, discussions, and guest perspectives. The course will help students majoring in related fields to prepare for careers in wildlife science and related conservation, management, and policy efforts; but students of any major should come away with a better
understanding of key issues facing iconic American wildlife species.
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: Middleton

ESPM C107 Biology and Geomorphology of Tropical Islands 15 Units

Terms offered: Fall 2025, Fall 2024, Fall 2023
In this class, students study the natural history and evolutionary biology of island terrestrial and freshwater organisms and their communities, and of marine organisms in the coral reef and lagoon systems. The students also learn about the geomorphology of volcanic islands, coral reefs, and reef islands. Features of island biogeography are illustrated with topics linked to subsequent field studies on the island of Mo'orea, French Polynesia. The course trains students as independent scientists, as students develop, conduct, and communicate independent research projects on a topic of their choice.
Rules & Requirements

Credit Restrictions: Students will receive no credit for INTEGBI C158L after completing INTEGBI C158, or INTEGBI 158L. A deficient grade in INTEGBI C158L may be removed by taking INTEGBI 158L.

Hours & Format

Fall and/or spring: 15 weeks - 10 hours of lecture and 14 hours of fieldwork per week

Additional Details

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

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

Formerly known as: Integrative Biology 158LF/Environ Sci, Policy, and Management C107

Also listed as: INTEGBI C158L

ESPM 108A Trees: Taxonomy, Growth, and Structures 3 Units

Terms offered: Fall 2025, Fall 2024, Fall 2023
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

Terms offered: Spring 2025, Spring 2024, Fall 2021
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 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 109A Island and Coral Reef Resilience and Ecosystem Services 3 Units

Terms offered: Spring 2025, Spring 2024
Students will learn the fundamentals of island and reef biology, geology, marine ecology and their inter-connectedness, as well as the physical and biological forces shaping and maintaining these ecosystems. The course will involve a significant amount of time in the field to expose students to the different island habitats and explore the ecosystem services provided by island habitats to local peoples and beyond. Students will interact directly with local people to learn about local perspectives on the value of these systems. This course is one of five co-requisite courses (ESPM 109A-E) that make up the study abroad program in Island Sustainability taught off campus on Moorea, French Polynesia, during the Spring semester.

Objectives & Outcomes

Course Objectives: 1. To provide fundamentals of island and reef biology, geology, marine ecology and their inter-connectedness, as well as the physical and biological forces shaping and maintaining these ecosystems.
2. To experience in the field the different island habitats and explore the ecosystem services provided by island habitats to local peoples and beyond.
3. To interact directly with local people to learn about local perspectives on the value of these systems.

Student Learning Outcomes: 1. Students will be able to summarize the fundamentals of Sustainability Science in the context of oceanography, geoscience, genetics, ecology, anthropology, economics, statistics and data science.
2. Students will be able to demonstrate a quantitative and qualitative understanding of interactions among individual organisms and between species and their biotic and abiotic environment.
3. Students will be able to design experiments to understand the importance and inter-connectedness of biological and physical forces that shape and maintain island ecosystems.
4. Students will be able to interpret the value of ecosystem services that islands provide.
5. Students will be able to articulate the perspective of local people on the value of island ecosystems based on their first hand experiences.
6. Students will be able to investigate and communicate the connections between the biological and social sciences and humanities as they affect sustainable development.

Rules & Requirements

Prerequisites: ESPM 109A, ESPM 109B, ESPM 109C, ESPM 109D and 109E must be taken at the same time as a study abroad program.
Restrictions

Hours & Format

Fall and/or spring: 3 weeks - 15 hours of lecture and 15 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 109B Polynesian Culture and Society 3 Units

Terms offered: Spring 2025, Spring 2024
This course is based at the Atitia Community Center adjacent to the Gump Station and on Tetiaroa. Students will learn about the history of the peopling of Oceania, and the waves of exploration and interaction that have shaped the Pacific. Students will be immersed into the way in which the first peoples of these islands understand and interact with their island homes, from a traditional to modern perspective, and with insights on human-environment interactions. Students will be presented with necessary historical and cultural context including basic language training, archeological field trips and interactions with local youth and elders at the Atitia Center and beyond to learn about local customs, traditions and attitude.

Objectives & Outcomes

Course Objectives: 1. To experience Polynesian atoll culture.
2. To provide in immersion in life of first peoples from a traditional to modern perspective, and with insights on human-environment interactions.
3. To present necessary historical and cultural context including basic language training, archeological field trips and interactions with local youth and elders at the Atitia Center and beyond to learn about local customs, traditions and attitude.

Student Learning Outcomes: 1. Students will gain an understanding of Oceania as a whole and Tahiti's place within it.
2. Students will be able to interpret basic languages and legends of Polynesian culture.
3. Students will be able to compare atoll and island culture from both traditional and modern perspectives.
4. Students will be able to articulate challenges to sustainability for island cultures.
5. Students will gain an appreciation of traditional ecological knowledge and how it shapes Tahitian culture.

Rules & Requirements

Prerequisites: ESPM 109A, ESPM 109B, ESPM 109C, ESPM 109D and 109E must be taken at the same time as a study abroad program

Hours & Format

Fall and/or spring: 3 weeks - 15 hours of lecture and 15 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 109C Issues in Biodiversity 3 Units

Terms offered: Spring 2025, Spring 2024
An overview of the major issues facing biodiversity globally today including habitat destruction, pollution, invasive species and disease, and examine how these issues are affecting island nations with a focus on French Polynesia. This course will make extensive use of the Biocode Project database to examine biodiversity on Moorea, and discuss genetic resilience and conservation technologies. We will then explore local attitudes and perspectives about these issues and examine local biodiversity initiatives. This course is one of five co-requisite courses (ESPM 109A-E) that make up the study abroad program in Island Sustainability taught off campus on Moorea, French Polynesia, during the Spring semester.

Objectives & Outcomes

Course Objectives: 1. To review of the major issues facing biodiversity globally today including habitat destruction, pollution, invasive species and disease.
2. To experience how these issues are affecting island nations with a focus on French Polynesia.
3. To use the Biocode Project database to examine biodiversity on Moorea, and discuss genetic resilience and conservation technologies.
4. To explore local attitudes and perspectives about these issues and examine local biodiversity initiatives.

Student Learning Outcomes: 1. Students will be able to recognize species within some particular group of organisms and interpret key aspects of their ecology, phylogeny, and conservation needs from both a modern scientific approach as well as that of traditional ecological knowledge.
2. Students will be able to articulate the goals and value of fundamental ecological and genetic observatories for sustainability science.
3. Students will obtain skills of database use and visualization.
4. Students will be able to design and evaluate initiatives with the goal to conserve biodiversity.

Rules & Requirements

Prerequisites: ESPM 109A, ESPM 109B, ESPM 109C, ESPM 109D and 109E must be taken at the same time as a study abroad program

Hours & Format

Fall and/or spring: 3 weeks - 15 hours of lecture and 15 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 109D Environmental Planning, Management, and Policy 3 Units

Terms offered: Spring 2025, Spring 2024
Students will be given an overview of the state of the field, as well as an understanding of current theory and practice; including western approaches and indigenous environmental management of terrestrial and marine resources. Rahui, a traditional Polynesian marine conservation practice will be examined through interaction with local communities that use it. Students will also learn about EU, Pacific-wide and international funding and conservation management initiatives affecting the lives and environment of Polynesians and people worldwide.

Objectives & Outcomes

Course Objectives: 1. To provide overview of the state of environment planning, management, and policy, as well as an understanding of current theory and practice; including western approaches and indigenous environmental management of terrestrial and marine resources.
2. To examine, Rahui, a traditional Polynesian marine conservation practice, through interaction with local communities that use it, and the French Polynesian division of the Pew Charitable Trust.
3.To learn about EU, Pacific-wide and international funding and conservation management initiatives affecting the lives and environment of Polynesians.

Student Learning Outcomes: 1. Students will be able to identify, interpret, and communicate sustainability ideas, needs and programs to others in different cultural contexts and multilingual societies, demonstrating effective scientific communication skills through development and delivery of oral presentations and written reports and case studies.
2. Students will be able to articulate the state of environment planning, management, and policy, as well as an understanding of current theory and practice; including western approaches and indigenous environmental management of terrestrial and marine resources.
3. Students will be able to interpret elements of modern marine conservation practice and how different agencies are necessary for effective action.
4. Students will be able to evaluate effectiveness of EU, Pacific-wide and international funding and conservation management initiatives affecting the lives and environment of local peoples.

Hours & Format

Fall and/or spring: 3 weeks - 15 hours of lecture and 15 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 109E Data Science, Communication and Professionalism 3 Units

Terms offered: Spring 2025, Spring 2024
The course will provide the fundamentals of data science across all disciplines and put them into practice on a project relevant to Island Sustainability. Exercises and group projects will hone oral, written, physical, and multimedia communication skills, with an emphasis on communicating for collaboration and outreach. Professional and ethical behavior will be emphasized in the context of Island Sustainability. Instruction will be primarily related to lecture material but will also cover issues related to conducting fieldwork, interacting with local/host communities, etc. This course is one of five co-requisite courses (ESPM 109A-E) that make up the study abroad program in Island Sustainability taught off campus on Moorea.

Objectives & Outcomes

Course Objectives: 1. To understand the fundamentals of data science across all disciplines and put them into practice on a project relevant to Island Sustainability.
2. To develop oral, written, physical, and multimedia communication skills, with an emphasis on communicating for collaboration and outreach.

3. To understand and practice professional and ethical behavior in the context of Island Sustainability.

Student Learning Outcomes: 1. Students will be able to identify, interpret, and communicate sustainability ideas, needs and programs to others in different cultural contexts and multilingual societies, demonstrating effective scientific communication skills through development and delivery of oral presentations and written reports and case studies.
2. Students will be able to articulate the state of environment planning, management, and policy, as well as an understanding of current theory and practice; including western approaches and indigenous environmental management of terrestrial and marine resources.
3. Students will be able to interpret elements of modern marine conservation practice and how different agencies are necessary for effective action.
4. Students will be able to evaluate effectiveness of EU, Pacific-wide and international funding and conservation management initiatives affecting the lives and environment of local peoples.

Rules & Requirements

Prerequisites: This course is one of five co-requisite courses (ESPM 109A-E) that make up the study abroad program in Island Sustainability taught off campus on Moorea, French Polynesia, during the Spring semester

Hours & Format

Fall and/or spring: 3 weeks - 15 hours of lecture and 5 hours of fieldwork per week

Additional Details

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

Grading/Final exam status: Letter grade. Alternate method of final assessment during regularly scheduled final exam group (e.g., presentation, final project, etc.).

ESPM C110A Ecological Analysis 4 Units

Terms offered: Fall 2025, Fall 2024, Fall 2023
This course focuses on natural factors of the environment that are fundamental to ecosystem management, land use planning and landscape design and their relationships to one another in different terrestrial ecosystems, from predominantly natural to predominantly anthropogenic. Lectures explore the key concepts on ecosystem structure, function and dynamics and discuss different types of ecological data, their interpretation and visualization that can aid in landscape research, planning and design workflow. Laboratory sections advance lecture topics by providing hands-on training in common types of ecosystem analyses using quantitative methods and geospatial tools.

Objectives & Outcomes

Course Objectives: Develop an understanding of natural factors of the environment that are fundamental to ecosystem management, landscape design and land use planning and common approaches for their assessment and analysis of their relationships to one another.

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.

Also listed as: LD ARCH C110A

ESPM 111 Ecosystem Ecology 4 Units

Terms offered: Spring 2025, Spring 2024, Spring 2023
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

Terms offered: Spring 2025, Spring 2024, Spring 2023
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.

Instructors: Almeida, Banfield

ESPM 112L Microbial Metagenomic Data Analysis Lab 1 Unit

Terms offered: Spring 2025, Spring 2024, Spring 2023
We will teach students how to perform genome-resolved metagenomics. We will start with raw data in the form of DNA sequencing reads, assemble the data, reconstruct genomes for coexisting organisms, evaluate overall community composition (which organisms are present and at what abundance levels), predict metabolic capacities, calculate growth rates, and investigate changes in the community over time. Working in pairs, the students will analyze real, unpublished data, identify an interesting question and investigate it. Evaluation is based on a final presentation of research findings.
Rules & Requirements

Prerequisites: Concurrent enrollment in Environmental Science Policy and Management 112 will be required for enrollment in Environmental Science Policy and Management 112L. Biology 1A and Biology 1B; Molecular and Cell Biology 102 is recommended

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. Alternate method of final assessment during regularly scheduled final exam group (e.g., presentation, final project, etc.).

Instructors: Almeida, Banfield

ESPM 113 Insect Ecology 3 Units

Terms offered: Spring 2022, Spring 2021, Spring 2020
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 - 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: Mills

ESPM 114 Wildlife Ecology 3 Units

Terms offered: Spring 2025, Spring 2024, Spring 2023
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

Summer: 6 weeks - 6.5 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.

Instructor: Brashares

ESPM 115B Coral Reef Ecology 3 Units

Terms offered: Fall 2025, Fall 2024, Fall 2011
Coral reefs are biodiverse, productive, valuable ecosystems threatened by global change stressors.
Through group activities, lectures, and discussion, we will explore the biotic and abiotic components
of coral reefs, and the factors contributing to reef construction and decline over time and space. We
will address how symbioses influence reef health and function, and how a given set of species may
profoundly benefit or antagonize one another under different circumstances. We will examine the
major disturbances and threats to coral reefs and evaluate proposed solutions in terms of their
potential benefits, costs, unknowns, and feasibility.

Rules & Requirements

Prerequisites: Biology 1A

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 115C Fish Ecology 3 Units

Terms offered: Spring 2025, Fall 2011, Fall 2010
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 C115A Freshwater Ecology 3 Units

Terms offered: Spring 2024, Spring 2023, Spring 2022
Lakes, rivers, wetlands, and estuaries are biologically rich, dynamic, and among the most vital and the most vulnerable of Earth’s ecosystems. Lectures will introduce general topics including the natural history of freshwater biota and habitats, ecological interactions, and ecosystem linkages and dynamics. Broad principles will be illustrated with results from selected recent research publications. Factors affecting resilience or vulnerability of freshwater ecosystems to change will be examined. Course requirements: two exams and a short synthesis paper projecting the future states of a freshwater or estuarine ecosystem of the student's choice under plausible scenarios of local, regional, or global change.

Hours & Format

Fall and/or spring: 15 weeks - 2 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: Ruhi

Formerly known as: Integrative Biology 171

Also listed as: INTEGBI C171

ESPM 116B Grassland and Woodland Ecology 4 Units

Terms offered: Spring 2025, Spring 2024, Spring 2023
An introduction to the ecology of selected grasslands, woodlands, and shrublands in the
western U.S. through a biogeographical survey of rangeland ecosystems. Selected plant
communities and their response to management, climate, and environmental factors, and the
effects of fire, grazing, and direct manipulation on ecological structure and function. Includes an
introduction to rangeland plants.

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: Huntsinger

ESPM 116C Tropical Forest Ecology 3 Units

Terms offered: Spring 2011, Spring 2009, Spring 2008
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

Terms offered: Summer 2022 Second 6 Week Session, Summer 2019 First 6 Week Session, Fall 2018
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

Summer: 6 weeks - 6.5 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: Altieri

ESPM 118 Agricultural Ecology 4 Units

Terms offered: Fall 2024, Fall 2023, Fall 2022
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 and 2 hours of laboratory per week

Additional Details

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

Grading/Final exam status: Letter grade. Alternate method of final assessment during regularly scheduled final exam group (e.g., presentation, final project, etc.).

Instructors: Altieri, Bowles

ESPM 120 Science of Soils 3 Units

Terms offered: Spring 2025, Spring 2024, Spring 2023
This course will introduce students to the study and management of soils as natural bodies, as media for plant
growth and as integral components of terrestrial ecosystems. It will present basic concepts of soil science
including: soil formation and classification, the physical, chemical, and biological properties of soils, the role of
soil in supplying water and nutrients to plants and soil organisms, as well as applications of soil concepts in
farming or engineering. The course will also introduce the relationships of soils to environmental problems.

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.

Instructors: Ammundson, Pallud

ESPM 121 Development and Classification of Soils 3 Units

Terms offered: Fall 2025, Fall 2023, Fall 2021
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 C124 Gender and Environment 4 Units

Terms offered: Spring 2025, Spring 2024, Fall 2023, Spring 2023
This course examines the centrality of gender and intersectionality in understanding nature-society relations across time and space. During the first half of the semester, students will become familiar with key feminist theoretical approaches to studying environmental problems, including ecofeminism, feminist environmentalism, feminist critiques of science, feminist political ecology, and queer and more-than-human ecologies. In the remainder of the semester, students will apply the theories learned to explore contemporary feminist environmental movements and analyze key topics, such as resource politics, pollution and toxins, environmental and reproductive justice, climate change, and the ethics of care.
Objectives & Outcomes

Student Learning Outcomes: Upon taking this course, students will be able to: 1) explain different approaches to theorizing the gender-environment nexus; and 2) apply theoretical and conceptual tools to engage with, reflect on, and critique contemporary local and global environmental issues from an intersectional feminist perspective.

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. Alternate method of final assessment during regularly scheduled final exam group (e.g., presentation, final project, etc.).

Instructor: Chung

Also listed as: ENE,RES C124

ESPM C125 Biogeography 4 Units

Terms offered: Fall 2025, Fall 2024, Fall 2022
The course will provide a historical background for the field of biogeography and the ecological foundations needed to understand the distribution and abundance of species and their changes over time. It will also discuss developing technologies (including genomic tools and environmental models) together with the availability of big data and increasingly sophisticated analytical tools to examine the relevance of the field to global change biology, conservation, and invasion biology, as well as sustainable food systems and ecosystem services.
Rules & Requirements

Prerequisites: BIO 1B

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: Gillespie

Also listed as: GEOG C148/INTEGBI C166

ESPM C126 Animal Behavior 4 Units

Terms offered: Fall 2025, Fall 2024, Fall 2023
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

Terms offered: Fall 2021, Fall 2020, Spring 2018
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: CIV ENG 111

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: CIV ENG C116

ESPM C129 Biometeorology 3 Units

Terms offered: Fall 2024, Fall 2022, Fall 2020
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 130 Food Justice 3 Units

Terms offered: Fall 2024, Fall 2000, Fall 1999
This course examines major structural issues in the dominant food system, and movements for food justice, food sovereignty and seed sovereignty organized by food producers, workers, and consumers that have arisen to assert access to healthy food as a human right. Through exploring how we are defining ‘healthy food’, and the spaces and communities which have historically had more constrained access to this food and its means of production, this class will work to familiarize students with food justice activism in the Bay Area and beyond.

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: Hoover

ESPM 130A Forest Hydrology 4 Units

Terms offered: Spring 2025, Spring 2024, Spring 2019
This course introduces the fundamental physical principles that are necessary to understand the distribution and dynamics of water near the Earth's surface. A quantitative approach will provide mathematical descriptions of hydrological phenomena that will be used for a variety of hydrological applications to river flow hydraulics, flood frequency analysis, evapotranspiration from terrestrial ecosystems, groundwater flow, and ecohydrological dynamics. The course will provide an introduction to hydrological processes and data analysis. The purpose of the laboratory is to illustrate in an experimental setting the principles and applications introduced in lecture.

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 and 1 hour 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.

Instructor: D’Odorico

ESPM C130 Terrestrial Hydrology 4 Units

Terms offered: Fall 2025, Fall 2024, Fall 2023
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: CHEM 1A, MATH 1A, MATH 1B, and 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: CIV ENG C103N/GEOG C136

ESPM 131 Soil Microbiology and Biogeochemistry 3 Units

Terms offered: Spring 2025, Spring 2024, Spring 2023
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.

Objectives & Outcomes

Course Objectives: The overall objective of the class is to provide an overview of the soil as a habitat for
microorganisms, and to introduce students to the diversity, ecology and activity of soil
microorganisms in the context of biogeochemical cycling, plant-microbe interactions, global
environmental change and bioremediation.

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.

Instructors: Pallud, Brodie

ESPM 132 Spider Biology 4 Units

Terms offered: Fall 2025, Fall 2024, Fall 2022
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 134 Fire, Insects, and Diseases in Forest Ecosystems 3 Units

Terms offered: Spring 2025, Spring 2024, Spring 2023
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 C135A Migration in the Contemporary World: California and Beyond 4 Units

Terms offered: Fall 2019
This course is designed to allow students to delve into the topic of migration in the contemporary world. Readings, discussions, and assignments will focus on 1) past and present immigration to California and beyond 2) the impact of immigration in relation to labor, health and the environment and 3) contemporary immigrant activism and organizing. A primary goal of the course is to utilize sociocultural theories to describe the experiences of immigrants in the U.S. Students will communicate what they are learning through discussions, weekly reading reflection, academic papers, and an Op-Ed. A variety of teaching methods will be employed including lectures, discussions and guest presentations (authors and indiviudals featured in books).

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. Alternative to final exam.

Instructors: Ceniza Choy, Holmes

Also listed as: ETH STD C135A

ESPM 136 Sustainable Industry 4 Units

Terms offered: Fall 2025, Fall 2024, Fall 2023
Academics, policy-makers, workers, communities, consumers, and business leaders are increasingly concerned about the environmental and social impacts of industry. A range of fields have emerged to respond to these concerns, seeking to redesign and re-align industrial systems and activities to be more ecologically and socially sound. This course explores internal firm capabilities (core functions, practices, technologies) and external pressures (governments, NGOs) to advance more sustainable industry. The course examines emerging production and consumption systems, introduces several methods for mapping and measuring the environmental and social impacts of industry, and evaluates recent strategies to advance more sustainable production.

Rules & Requirements

Credit Restrictions: Students will receive no credit for ESPM 136 after completing ESPM 136. A deficient grade in ESPM 136 may be removed by taking ESPM 136.

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. Alternative to final exam.

Instructor: O'Rourke

ESPM 137 Landscape Ecology 3 Units

Terms offered: Fall 2025, Fall 2024, Fall 2023
Landscape ecology is the study of spatial variation in ecological and environmental patterns and processes. 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. We will examine the key concepts of ecological flow in landscape mosaics, the interplay between pattern and process, environmental and population dynamics, and landscape conservation and sustainability. We will explore each of these at a variety of spatial scales, from regional to global, and across taxonomic levels, from organisms to ecosystems.

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: Wang

ESPM C138 Introduction to Comparative Virology 4 Units

Terms offered: Spring 2025, Spring 2024, Spring 2023
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 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: Glaunsinger

Also listed as: MCELLBI C114/PLANTBI C114

ESPM 139 THE ENVIRONMENT AND THE SELF: AN ECO PRACTICUM 2 Units

Terms offered: Fall 2021, Fall 2019, Fall 2017
This course will provide a practical exploration of how to engage effectively with contemporary environmental issues using discussion of scientific and philosophical texts, activities, and group work. We will evaluate how different worldviews influence how humans relate to the natural world and how our own worldview shapes our way of engaging in environmental problem solving.

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: Rosenblum

ESPM 139A Genetics of Amphibian Declines CURE 3 Units

Terms offered: Fall 2024, Fall 2022
The Genetics of Amphibian Declines Lab is a course-based research experience (CURE) where students conduct team-based original research projects.
Contemporary loss of amphibian biodiversity is due in large part to the impacts of emerging
infectious disease. We will study these pathogens of amphibians in local Bay Area field sites.
Students will be guided through all stages of the scientific research process from reading the
primary literature and forming hypotheses to designing experiments, collecting and analyzing
data, and presenting results. Students will learn collaborative research skills and contribute new
biological knowledge to the field of amphibian disease 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. Alternative to final exam.

Instructor: Rosenblum

ESPM 140 General Entomology 4 Units

Terms offered: Spring 2025, Spring 2024, Spring 2023
A comprehensive course on the biology of terrestrial and aquatic insects, their morphology, physiology, behavior, taxonomy, and ecology. The lab covers the identification and classification of insect orders and common families, insect collecting and sampling methods, and includes a required insect collection project. Course includes an overnight field trip to a research property.

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: Will

ESPM 140A General Entomology 2 Units

Terms offered: Spring 2025
Insects as a group make up more than 50% of all described species of living organisms
and insects impact all aspects of our daily lives. This course intends to introduce students to insect
biology and various areas of research in entomology at a detailed level. This will be done in lectures and
readings that focus on the biology, ecology, morphology, physiology, natural history, and taxonomy of
insects.

Rules & Requirements

Credit Restrictions: Students will receive no credit for ESPM 140A after completing ESPM 140. A deficient grade in ESPM 140A may be removed by taking ESPM 140.

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 141A Climate Change Solutions 4 Units

Terms offered: Summer 2020 Second 6 Week Session
Climate Change Solutions course consists of 18 original video lectures from 23 UC researchers and academics. Students watch assigned lectures in advance, then come to class for rich discussions facilitated by the instructor. Content emphasizes both climate knowledge and solutions across a wide range of academic disciplines, and enables students to use showcase their learning in a capstone project.

Hours & Format

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

Summer: 6 weeks - 9 hours of discussion per week

Additional Details

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

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

Instructors: Silver, Potts

ESPM 142 Insect Behavior 3 Units

Terms offered: Spring 2025, Fall 2023, Fall 2022
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: High school biology course or Bio1B

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: Tsutsui

ESPM 144 Insect Physiology 3 Units

Terms offered: Spring 2025, Spring 2024, Spring 2023
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 147 Field Entomology 1 Unit

Terms offered: Fall 2024, Fall 2023, Fall 2022
This course introduces identification 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: 40, 42, 140, or consent of instructor

Repeat rules: Course may be repeated for credit up to a total 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: Offered for pass/not pass grade only. Alternative to final exam.

ESPM C148 Pesticide Chemistry and Toxicology 3 Units

Terms offered: Spring 2018, Spring 2017, Spring 2016
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 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: Casida

Also listed as: NUSCTX C114

ESPM 149 Bodies, Difference, and the Environment 4 Units

Terms offered: Spring 2024
This course centers the body as a key analytic to understanding the more-than-human world. The sick, injured, and disabled body is a central and reoccurring theme within environmental scholarship, as is its opposite, the healthy, robust, and fit body. In this class we will explore the sociopolitical and ethical relationships between altered bodily capacity, vulnerability, dependency, and systems of violence to nature and people, while attending to the sometimes troubling ways conversations around ecological health and fitness are informed by social inequality
Objectives & Outcomes

Course Objectives: 1.)
To read critically, carefully, generously, creatively, and playfully;
2.)
To develop questions of and from course texts;
3.)
To develop an understanding of identity formation, intersectionality, and social inequality
4.)
To identify the ways in which cultural beliefs about “nature” have been shaped by categories of human difference
5.)
To recognize that perceptions of “nature” have social, political, and economic effects that in turn impact our bodies
6.)
To discuss the methods that have been used to critique, resist, and challenge traditional Western understandings of “nature.”

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: Taylor

ESPM 150 Special Topics in Environmental Science, Policy, and Management 2 - 4 Units

Terms offered: Fall 2025, Spring 2025, Fall 2024
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 when topic changes.

Hours & Format

Fall and/or spring: 15 weeks - 2-3 hours of lecture and 0-1 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 151 Society, Environment, and Culture 4 Units

Terms offered: Spring 2020, Spring 2019, Spring 2018
Society and the natural environment are vitally linked in a number of ways. Environmental
problems such as pollution and natural resource depletion are not only problems for society,
affecting the way we live our lives; they are also problems of society—the result of patterns of
social organization and social practices. In this course we will explore some various issues,
concepts, and processes pertaining to the diverse approaches to understanding the relationship
between human society, culture, and the environment.

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.

Instructor: Mascarenhas

ESPM 152 Global Change Biology 3 Units

Terms offered: Summer 2025 8 Week Session, Spring 2025, Summer 2024 8 Week Session
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

Summer: 8 weeks - 4.5 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: Rosenblum

ESPM C153 Ecology 3 Units

Terms offered: Spring 2025, Spring 2024, Spring 2023
Ecology is a scientific discipline that focuses on the interactions between organisms and their
environment. This class will provide an overview of core concepts and applications, and will also provide practice with writing, small-group work, critical thinking, and data analysis.
The class will specifically cover principles of population ecology, illustrated with examples from marine, freshwater, and terrestrial habitats. It will consider the roles of physical and biological processes in structuring natural communities. Observational, experimental, and theoretical approaches will be discussed. Topics will include quantitative approaches relying on algebra, visual analysis of graphs, and elementary calculus.

Rules & Requirements

Prerequisites: Biology 1B or consent of instructor

Credit Restrictions: Students will receive no credit for INTEGBI C153 after completing ESPM 153, or INTEGBI C153. A deficient grade in INTEGBI C153 may be removed by taking ESPM 153, or INTEGBI C153.

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. Alternative to final exam.

Instructors: Blonder, Razafindratsima

Formerly known as: Integrative Biology 153

Also listed as: INTEGBI C153

ESPM 154 Landscape Genetics 4 Units

Terms offered: Fall 2024, Spring 1999, Spring 1998
Landscape genetics is an interdisciplinary field that integrates principles from population genetics and landscape ecology to investigate how environmental factors influence genetic variation. This course will examine how landscape heterogeneity affects microevolutionary processes, including gene flow, drift, and selection. We will also explore how landscape genetics can be applied to conservation and land management and the role of genetic diversity in maintaining biodiversity and ecosystem function. Lab exercises will focus on applying spatial analysis to genomic data to quantify the impacts of landscape features on population dynamics and to gain a deeper understanding of the intricate relationship between genetics and the environment.

Rules & Requirements

Prerequisites: Biolog 1B

Hours & Format

Fall and/or spring: 15 weeks - 2 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. Alternative to final exam.

Instructor: Wang

ESPM 155AC Sociology and Political Ecology of Agro-Food Systems 4 Units

Terms offered: Summer 2025 10 Week Session, Summer 2024 10 Week Session, Spring 2024
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

Summer: 10 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.

Instructor: De Master

Formerly known as: Environ Sci, Policy, and Management 155

ESPM C156 Animal Communication 3 Units

Terms offered: Spring 2024, Spring 2022, Spring 2020
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

Formerly known as: Environ Sci, Policy, and Management 156

Also listed as: INTEGBI C145

ESPM 157 Data Science in Global Change Ecology 4 Units

Terms offered: Fall 2025, Fall 2024, Fall 2023
Many of the greatest challenges we face today come from understanding and interacting with the natural world: from global climate change to the sudden collapse of fisheries and forests, from the spread of disease and invasive species to the unknown wealth of medical, cultural, and technological value we derive from nature. Advances in satellites and micro-sensors, computation, informatics and the Internet have made available unprecedented amounts of data about the natural world, and with it, new challenges of sifting, processing and synthesizing large and diverse sources of information. In this course, students will learn and apply fundamental computing, statistics and modeling concepts to a series of real-world ecological and environment

Rules & Requirements

Prerequisites: No prior knowledge is assumed or expected, though prior exposure to programming, particularly from the Foundations of Data Science (COMPSCI C8 / INFO C8 / STAT C8), will be helpful

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. Alternative to final exam.

Instructor: Boettiger

ESPM 158 Biodiversity Conservation in Working Landscapes 4 Units

Terms offered: Spring 2017, Spring 2016, Spring 2015
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 and 2 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.

Instructor: Kremen

ESPM 160AC American Environmental and Cultural History 4 Units

Terms offered: Spring 2021, Summer 2019 Second 6 Week Session, Summer 2018 Second 6 Week Session
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. Readings are from primary source documents supplemented by recent essays.

Rules & Requirements

Credit Restrictions: Students will receive no credit for Environ Sci, Policy, and Management ESPM 160AC/HIST120AC after taking Envron Sci, Policy and Management ESPM 160AC

Requirements this course satisfies: Satisfies the American Cultures requirement

Hours & Format

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

Summer: 6 weeks - 7.5 hours of lecture and 3 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: Worthy

Formerly known as: 160AC

Also listed as: HISTORY 120AC

ESPM 161 Environmental Philosophy and Ethics 4 Units

Terms offered: Summer 2025 Second 6 Week Session, Summer 2024 Second 6 Week Session, Summer 2023 Second 6 Week Session
A cross-cultural comparison of human environments as physical, socio-economic, and technocultural ecosystems with special emphasis on the role of beliefs, attitudes, ideologies, and behavior. An examination of contemporary environmental literature and the philosophies embodied therein.

Rules & Requirements

Credit Restrictions: Students will receive no credit for Environ Sci, Policy, and Management ESPM 161 after taking Envron Sci, Policy and Management 161, summer session.

Hours & Format

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

Summer: 6 weeks - 7.5 hours of lecture and 3 hours of discussion per week

Additional Details

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

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

ESPM 161A Thinking With Animals 4 Units

Terms offered: Fall 2022
Animals have long been the subject of human inquiry. As historian Harriet Ritvo writes, “Learned attention to the animal is far from new." However, in recent decades social movements, artists, and scholars have focused more frequently, and perhaps more urgently, on what Derrida called “the question of the animal.” In this course we will look to how centering the animal challenges human exceptionalism, anthropocentrism, and traditional critical discourse. Tracing the ways work in animal studies denaturalizes hierarchical taxonomies, defines key concepts such as human and animal, and articulates boundaries between species, this course will follow the various political, relational, ethical and imaginative implications of thinking with animals.

Objectives & Outcomes

Course Objectives: To be able to interrogate the taxonomies and hierarchical systems that have traditionally served to divide human from animal

To develop an understanding of the key concepts emerging from the field of animal studies

To develop questions of and from course texts;

To discuss the methods that have been used to critique, resist, and challenge traditional Western understandings of species hierarchy

To identify the ways in which cultural beliefs about “animals” are shaped by categories of human difference

To read critically, carefully, generously, creatively, and playfully;

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: Taylor

ESPM 162 Bioethics and Society 4 Units

Terms offered: Spring 2019, Fall 2017, Fall 2016
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

Summer: 6 weeks - 7.5 hours of lecture and 3 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: Worthy

ESPM 162A Health, Medicine, Society and Environment 4 Units

Terms offered: Fall 2020, Fall 2019, Fall 2018
Introduces students to intersections between health, medicine, society, and environment through medical and environmental anthropology, political ecology, medical geography, and the social studies of science, technology and the natural environment. Readings, discussions, and assignments will explore the sociocultural, political economic, and environmental aspects of illness, care, disease, biomedicine, and health (in)equity.

Objectives & Outcomes

Course Objectives: This course will provide an overview of key theoretical and
methodological approaches as well as central arguments to understand the relationships between health, medicine, society and environment. The course will lend context and highlight concepts that are important to understandings of and movements toward social and health equity.

Student Learning Outcomes: Critically assess social and health issues appearing in scholarly
publications and the popular press;, Practice communicating ideas and analyses in language that can be generally understood;, Work with classmates from multiple disciplines and backgrounds in order to realize the importance of multidisciplinary approaches for solving social and health inequities;, Apply sociocultural, political economic, and critical theory frameworks for understanding conflicts in the realms of public health, global health, medicine, and public policy., Demonstrate knowledge in major areas of health and society in relation to current debates in medical anthropology and cognate social sciences;, Engage with increasingly popular subfields of the medical social sciences including those on issues of health inequities, care, medical science, sickness, anguish, and resistance.

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. Alternate method of final assessment during regularly scheduled final exam group (e.g., presentation, final project, etc.).

ESPM C162A Inequality and the Body: Health, Medicine, Society and Environment 4 Units

Terms offered: Fall 2025, Fall 2024, Fall 2023
Introduces students to intersections between health, medicine, society, and environment through medical and environmental anthropology, political ecology, medical geography, and the social studies of science, technology and the natural environment. Readings, discussions, and assignments will explore the sociocultural, political economic, and environmental aspects of illness, care, disease, biomedicine, and health (in)equity.

Objectives & Outcomes

Course Objectives: Critically assess social and health issues appearing in scholarly
publications and the popular press;, Practice communicating ideas and analyses in language that can be generally understood;, Work with classmates from multiple disciplines and backgrounds in order to realize the importance of multidisciplinary approaches for solving social and health inequities;, Apply sociocultural, political economic, and critical theory frameworks for understanding conflicts in the realms of public health, global health, medicine, and public policy., Demonstrate knowledge in major areas of health and society in relation to current debates in medical anthropology and cognate social sciences;, Engage with increasingly popular subfields of the medical social sciences including those on issues of health inequities, care, medical science, sickness, anguish, and resistance.
This course will provide an overview of key theoretical and methodological approaches as well as central arguments to understand the relationships between health, medicine, society and environment. The course will lend context and highlight concepts that are important to understandings of and movements toward social and health equity.

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. Alternate method of final assessment during regularly scheduled final exam group (e.g., presentation, final project, etc.).

Also listed as: ANTHRO C119A

ESPM 163AC Environmental Justice: Race, Class, Equity, and the Environment 4 Units

Terms offered: Fall 2025, Summer 2025 Second 6 Week Session, Fall 2024, Fall 2023
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

Summer: 6 weeks - 6 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: O'Rourke

Formerly known as: Sociology 128AC

Also listed as: SOCIOL 137AC

ESPM 164 GIS and Environmental Science 3 Units

Terms offered: Fall 2022, Fall 2021, Fall 2020
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 - 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, with common exam group.

Instructor: Kelly

ESPM 165 International Rural Development Policy 4 Units

Terms offered: Spring 2023, Spring 2022, Spring 2021
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 C167 Environmental Health and Development 4 Units

Terms offered: Spring 2025, Spring 2024, Spring 2023
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.

Rules & Requirements

Credit Restrictions: Students will receive no credit for ESPM C167 after completing ESPM 167.

Hours & Format

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

Summer: 6 weeks - 6.5 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.

Instructor: Morello-Frosch

Also listed as: PB HLTH C160

ESPM 168 Political Ecology 4 Units

Terms offered: Spring 2022, Spring 2021, Spring 2020
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

Terms offered: Summer 2025 Second 6 Week Session, Summer 2024 Second 6 Week Session, Spring 2024
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 3 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 W169 International Environmental Politics 4 Units

Terms offered: Summer 2023 Second 6 Week Session, Summer 2022 Second 6 Week Session, Summer 2021 Second 6 Week Session
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.

Rules & Requirements

Credit Restrictions: Students will receive no credit for ESPM W169 after completing ESPM 169. A deficient grade in ESPM W169 may be removed by taking ESPM 169.

Hours & Format

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

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

Online: This is an online course.

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

Terms offered: Spring 2025, Fall 2023, Fall 2021
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 171A Critical Zone Characterization using Geophysical Methods 2 Units

Terms offered: Spring 2021, Spring 2019
This class provides an introduction to the use of environmental geophysical methods and data integration approaches to quantify critical zone properties and interactions across compartments, from within the bedrock through the vegetative canopy.

Hours & Format

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

Summer: 6 weeks - 2.5 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: Hubbard

ESPM 172 Remote Sensing of the Environment 3 Units

Terms offered: Spring 2020, Fall 2013, Spring 2010
The course will introduce junior/senior undergraduate students to the basic physical concepts of remote sensing as they relate to different earth surface processes. It will introduce students to a variety of recently developed ground, airborne, and satellite instruments and their applications to monitor and analyze environmental processes. These include active (e.g., Lidar), and passive (radiometers) sensors, optical (e.g., Landsat, MODIS), microwave (e.g., SMAP), and gravitational (e.g., GRACE) satellites.

Rules & Requirements

Credit Restrictions: Students will receive no credit for ESPM 172 after completing FOREST 102.

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: Girotto

ESPM C172 Remote Sensing of the Environment 4 Units

Terms offered: Fall 2025, Fall 2022, Fall 2021
The course will introduce junior/senior undergraduate students to the basic physical concepts of remote sensing as they relate to different earth surface processes. It will introduce students to a variety of recently developed ground, airborne, and satellite instruments and their applications to monitor and analyze environmental processes. These include active (e.g., Lidar), and passive (radiometers) sensors, optical (e.g., Landsat, MODIS), microwave (e.g., SMAP), and gravitational (e.g., GRACE) satellites.

Rules & Requirements

Credit Restrictions: Students will receive no credit for ESPM C172 after completing CIV ENG 172, or ESPM 172. A deficient grade in ESPM C172 may be removed by taking CIV ENG 172, or ESPM 172.

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: Girotto

Also listed as: CIV ENG C172

ESPM 173 Introduction to Ecological Data Analysis 3 Units

Terms offered: Fall 2023, Fall 2022, Fall 2021
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.

Rules & Requirements

Credit Restrictions: Students will receive no credit for ESPM 173 after completing STAT 131A. A deficient grade in ESPM 173 may be removed by taking STAT 131A.

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 174 Design and Analysis of Ecological Research 4 Units

Terms offered: Spring 2019, Spring 2017, Fall 2014
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 174A Applied Time Series Analysis for Ecology and Environmental Sciences 3 Units

Terms offered: Fall 2023, Fall 2021, Fall 2020
In this course we will learn how to analyze time-series data using real-world examples from
ecology and environmental sciences. We will study how to mathematically describe a time
series, and test hypotheses about the underlying processes generating the observed patterns.
We will cover univariate and multivariate state-space models, with an incursion into statistical
forecasting and analyses in the frequency domain (e.g., Discrete Fast Fourier Transform).

Hours & Format

Fall and/or spring: 15 weeks - 2 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. Alternative to final exam.

Instructor: Ruhi

ESPM 175A Senior Research Seminar in Environmental Sciences 3 Units

Terms offered: Fall 2025, Fall 2024, Fall 2023
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

Terms offered: Spring 2025, Spring 2024, Spring 2023
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

Terms offered: Fall 2025, Fall 2020, Fall 2019
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 without restriction.

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

Terms offered: Fall 2025, Fall 2024, Fall 2023
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

Terms offered: Spring 2016, Spring 2015
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

Terms offered: Fall 2016, Spring 2016, Fall 2015
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 176A Climate Change, Ecosystems, and Solutions 2 Units

Terms offered: Spring 2025
Cars, power plants, deforestation, and other human sources pump greenhouse gases into the
atmosphere, causing anthropogenic climate change, which has driven two animal species
extinct and caused tree mortality, wildfire increases, sea level rise, ocean acidification, and
other impacts. Scientific research shows that the world can cut carbon pollution to avoid the
most severe risks. This course aims to teach (1) the science of anthropogenic climate change,
(2) applications to biodiversity conservation in national parks and other protected areas, (3)
carbon solutions. Students will produce a climate change assessment for a protected area of
their choice. The course welcomes students interested in advancing meaningful action on
climate change.

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: Gonzalez

ESPM C176 CLIMATE JUSTICE 4 Units

Terms offered: Fall 2025, Fall 2023, Fall 2022
Climate change is transforming our world in ways we are only beginning to understand, and in many ways we cannot yet imagine. The emerging theoretical and practical lenses of social and environmental justice (EJ) provide tools with which to examine and understand this new world. Using literature, media, and engaged field experiences, this course brings together the scholarship, scientific and engineering innovation, policy, literature and media, and activism around the interacting themes of climate change and social justice.

Rules & Requirements

Credit Restrictions: Students will receive no credit for ENE,RES C160 after completing ENE,RES 160, or ARCH 153. A deficient grade in ENE,RES C160 may be removed by taking ENE,RES 160, or ARCH 153.

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. Alternative to final exam.

Instructor: Mills-Novoa

Also listed as: ENE,RES C160

ESPM 177A Sustainable Water and Food Security 4 Units

Terms offered: Summer 2021 Second 6 Week Session, Summer 2020 Second 6 Week Session, Spring 2019
In this class we will study basic principles of environmental sustainability from the perspective of water and food security, and apply them to human use of land and land based resources. An analysis of major mechanisms of land degradation and of the major technological advances that are expected to burst food production worldwide will be used as the basis for a discussion on the extent to which the Earth can sustainably feed humanity.

Hours & Format

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

Summer: 6 weeks - 7.5 hours of lecture and 2.5 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.

Instructor: D'odorico

Formerly known as: Environ Sci, Policy, and Management 177

ESPM C177 GIS and Environmental Spatial Data Analysis 4 Units

Terms offered: Spring 2017, Spring 2016, Spring 2015
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

Terms offered: Fall 2015, Spring 2010, Spring 2009
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 without restriction.

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 C179A GC-Maker Lab I: Skills and Theory 2 Units

Terms offered: Fall 2016
In the environmental and biological sciences, one of the biggest challenges in transitioning from student to researcher is learning how to measure something without an off-the-shelf device. This course will provide the theoretical background and the practice of building a Gas Chromatograph (GC) system for environmental research. The first semester is for students who seek to develop fundamental skills in instrumental development and design. The second semester (c179b) is only open to those who have taken this first semester course and will entail the construction of a working gas chromatograph system. This class will be especially useful for students who wish to pursue research following graduation.
Rules & Requirements

Prerequisites: Chem 3AL, or instructor permission

Hours & Format

Fall and/or spring: 15 weeks - 2 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.

Instructor: Rhew

Also listed as: GEOG C179A

ESPM C179B GC-Maker Lab II: Instrument development 4 Units

Terms offered: Spring 2017
In the environmental and biological sciences, one of the biggest challenges in transitioning from student to researcher is learning how to measure something without an off-the-shelf device. This course will involve the actual building a gas chromatograph (GC) system for environmental research. In addition, we will provide the option of building a mini datalogging sensor for measuring basic environmental parameters using the Arduino platform. This course offered in the spring semester is only open to those who have taken this first semester course (c179A), which covers the fundamental skills required to undertake this project. This class is designed for upper division undergraduates to early graduate students.
Rules & Requirements

Prerequisites: Chem 3AL, GC-Maker Lab I (fall semester)

Hours & Format

Fall and/or spring: 15 weeks - 6 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.

Instructor: Rhew

Also listed as: GEOG C179B

ESPM C180 Air Pollution 3 Units

Terms offered: Spring 2024, Spring 2023, Spring 2022
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: CHEM 1A, CHEM 1B, and 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

Terms offered: Fall 2023, Spring 2021, Spring 2019
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

Terms offered: Fall 2024, Fall 2022, Fall 2020
The purpose of the course is to provide students with basic knowledge of how to plan for and conduct forest treatments. It is meant as a companion to silviculture, which is the planning out and scheduling of treatments in order to meet defined objectives in forests. As such, Forest Operations does not focus on the reason for conducting treatments but rather how they are done. Topics include the types of equipment that are used in thinning, harvesting, prescribed fire, and vegetation management. The administrative requirements involved with planning operations (e.g. permit acquisition and contracts) are covered, as are principles of road maintenance and road abandonment. Two weekend field trips are required. A prescribed fire will be planned

Rules & Requirements

Prerequisites: 105A, 105B, 105C, 105D . It is preferred that ESPM 185 is taken prior to or at the same time as ESPM 182

Hours & Format

Fall and/or spring: 10 weeks - 1 hour of lecture, 1 hour of discussion, 3.2 hours of fieldwork, and 1.6 hours of laboratory per week

Summer: 6 weeks - 3 hours of lecture, 3 hours of discussion, 6 hours of fieldwork, 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: York

ESPM 183 Forest Ecosystem Management and Planning 4 Units

Terms offered: Spring 2025, Spring 2024, Spring 2023
Introduces students to concepts and quantitative tools needed for the sustainable management and planning of multi-use forest ecosystems. Topics covered include: forest regulation; estimation of ecological, economic, and social values; construction of dynamic forest models; methods for optimal decision-making; development of forest management plans; and ethics of natural resource management. Application to current issues in temperate and tropical forest management are discussed. Quantitative, analytical, and communication skills are emphasized. Oral presentation required.

Rules & Requirements

Prerequisites: ESPM 102C or instructor permission

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: O'Hara

ESPM C183 Forest Ecosystem Management 4 Units

Terms offered: Spring 2016, Spring 2015, Spring 2014
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

Terms offered: Fall 2010, Fall 2009, Fall 2008
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

Terms offered: Fall 2025, Fall 2024, Fall 2023
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: IB 153, ESPM 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 Grassland and Woodland Management and Conservation 4 Units

Terms offered: Fall 2024, Fall 2023, Fall 2022
California's woodlands, grasslands, and shrublands provide abundant environmental benefits including extensive wildlife habitat. Most is used for ranching and managed through grazing animals. Ecosystem stewardship and ecological dynamics meet in rangeland management, including new institutional arrangements for conservation and restoration, management for carbon sequestration, and Indigenous partnerships. Origins of grazing animals and methods for assessing management outcomes.

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

Terms offered: Spring 2014, Spring 2013, Spring 2012
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

Terms offered: Spring 2014, Spring 2013, Spring 2012
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 189A Urban Ecology and Evolution 4 Units

Terms offered: Spring 2025, Spring 2024, Spring 2023
This course examines the complex, coupled and heterogeneous interactions that occur among organisms, humans, and the urban environment. We will emphasize foundational concepts in urban ecology spanning the organismal, population, community, and ecosystem levels, with special focus on the role of social-ecological dynamics in shaping the emergent properties of urban biological systems. We will also discuss how such interactions lead to rapid evolutionary change in cities and discuss what that means for urban biodiversity and conservation. Finally, we will address how cities regionally and globally have similar and dissimilar properties, and how we can apply urban ecological principles to urban planning, design, conservation, wildlife manage.

Rules & Requirements

Prerequisites: Introductory Statistics Course

Hours & Format

Fall and/or spring: 15 weeks - 4 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: Schell

ESPM 190 Seminar in Environmental Issues 3 Units

Terms offered: Fall 2023, Spring 2017, Fall 2010
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 without restriction.

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

Terms offered: Spring 2012, Spring 2011, Spring 2007, Fall 2004
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

Terms offered: Fall 2020, Spring 2019, Fall 2018
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

Terms offered: Fall 2012, Fall 2011, Fall 2010
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 194A Senior Seminar in Conservation and Resource Studies 2 Units

Terms offered: Fall 2025, Spring 2025, Fall 2024
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

Terms offered: Spring 2020, Fall 2019, Spring 2019
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

Terms offered: Fall 2024, Spring 2021, Fall 2020
Supervised independent research specific to aspects of ESPM, followed by a written report.
It is recommended that students conduct 3-4 units of research for at least one semester prior to enrolling in ESPM 195 in their senior year.
Rules & Requirements

Prerequisites: Senior standing in ESPM major; 3.0 GPA

Hours & Format

Fall and/or spring: 15 weeks - 3-4 hours of independent study per week

Summer:
6 weeks - 7.5-10 hours of independent study per week
8 weeks - 6-7.5 hours of independent study per week

Additional Details

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

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

ESPM H196 Honors Research 4 Units

Terms offered: Spring 2020, Spring 2019, Fall 2016
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 credit up to a total 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 - 4 Units

Terms offered: Summer 2025 10 Week Session, Spring 2023, Spring 2022
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 without restriction.

Hours & Format

Fall and/or spring: 15 weeks - 1-4 hours of fieldwork per week

Summer:
6 weeks - 1-9 hours of fieldwork per week
8 weeks - 1-7 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 197FS Community Engagement in Agri-Food Systems 3 Units

Terms offered: Spring 2025, Spring 2024
The goal of this class is for you to directly apply the knowledge you have gained through your food and agriculture-related coursework in a real world setting. As such, the primary emphasis of the class is completing a 70-hour community-based internship with a food and agriculture organization, typically (but not exclusively) in the Bay Area. You may elect to participate in internships with an established community partner or an organization of your own choosing. Class time will be devoted to guiding and supporting your internship and will emphasize individual check-ins, group discussion, and activities designed to underscore the basic principles of community engagement.
Rules & Requirements

Prerequisites: Food Systems Minor

Hours & Format

Fall and/or spring: 15 weeks - 1 hour of lecture and 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. Alternative to final exam.

ESPM 198 Directed Group Studies for Advanced Undergraduates 1 - 3 Units

Terms offered: Spring 2025, Fall 2024, Spring 2024
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 without restriction.

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

Terms offered: Fall 2025, Fall 2024, Fall 2023
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 without restriction.

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

Terms offered: Fall 2024, Fall 2021, Spring 2021
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 without restriction.

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 199S Sponsored Projects for Undergraduate Research (SPUR) 1 - 4 Units

Terms offered: Prior to 2007
The Sponsored Projects for Undergraduate Research (SPUR) program helps students get involved in research projects with world renowned faculty and staff researchers in the Rausser College of Natural Resource

Rules & Requirements

Repeat rules: Course may be repeated for credit without restriction.

Hours & Format

Fall and/or spring: 15 weeks - 3-12 hours of independent study per week

Summer: 12 weeks - 5-18 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. Alternative to final exam.

ESPM C200 Principles of Phylogenetics 4 Units

Terms offered: Spring 2024, Spring 2023, Spring 2022, Spring 2020, Spring 2018, Spring 2016
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 - 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: Ackerly, Mishler, Will

Also listed as: INTEGBI C200

ESPM 201A Research Approaches in Environmental Science, Policy, and Management 3 Units

Terms offered: Spring 2025, Fall 2023, Fall 2022
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 seminar per week

Additional Details

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

Grading: Letter grade.

Instructor: Mills

ESPM 201C Environmental Forum 1 Unit

Terms offered: Fall 2025, Fall 2024, Spring 2024
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 without restriction.

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

Terms offered: Fall 2019, Spring 2019, Fall 2018
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 colloquium 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

Terms offered: Fall 2025, Spring 2025, Fall 2024, Spring 2024
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 without restriction.

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

Formerly known as: Psychology C204, Integrative Biology C204

Also listed as: INTEGBI C204

ESPM 205 Quantitative Methods for Ecological and Environmental Modeling 3 Units

Terms offered: Fall 2024
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

Terms offered: Fall 2015, Fall 2013, Fall 2012, Fall 2011, Fall 2009
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

Terms offered: Spring 2017, Spring 2016, Spring 2015
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 207 Data Assimilation and Artificial Intelligence in Hydrology 2 Units

Terms offered: Fall 2025
The hydrologic community has experienced a surge of data in recent years. This class will discuss methods to handle such wealth of data and their uncertainties. We will particularly discuss methods for data assimilation as well as machine learning methods and applications. The focus will be on hydrology processes, but the covered concepts can be applied to other topics of Earth system processes. Basic statistics and physics knowledge, basic computing skills. However, this class has no formal coding skills requirements and students will be given the opportunity to learn these skills.

Objectives & Outcomes

Course Objectives: At the end of this course, students will be able to use various analytical and numerical techniques for solving authentic data assimilation or machine learning problems.

Rules & Requirements

Prerequisites: Basic Statistic and Physics Knowledge, basic MATLAB/ python computing skills. However, this class has no formal requirements and students will be given the opportunity to learn these skills

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: Girotto

ESPM C211 Modeling Ecological and Meteorological Phenomena 3 Units

Terms offered: Fall 2015, Fall 2014, Fall 2013
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

Terms offered: Spring 2025, Spring 2024, Fall 2023
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

Terms offered: Spring 2022, Spring 2021, Spring 2020, Spring 2015, Spring 2014, Spring 2013
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

Terms offered: Fall 2025, Fall 2022, Fall 2020
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 C218 Urban Forestry 3 Units

Terms offered: Prior to 2007
Our class introduces foundational concepts of urban
ecology with the emphasis on urban trees and their social and ecological implications.
We will explore different aspects of urban forest ecological functioning, benefits and
disservices, practical issues related to their management, planning, and design, and
social and environmental justice aspects of urban trees. We will investigate these topics
through a diverse array of activities including in-class discussions, readings, reflections,
presentations and outdoor tree walks.

Rules & Requirements

Prerequisites: this course requires a basic understanding of plant and ecosystem ecology via at least one introductory course in general ecology, ecosystem ecology, plant or forest ecology, ecological analysis (e.g., ESPM/LDARCH C110), or similar

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: Dronova

Also listed as: LD ARCH C290

ESPM C220 Stable Isotope Ecology 5 Units

Terms offered: Spring 2024, Spring 2023, Spring 2022, Spring 2021, Spring 2020, Spring 2019, Spring 2016
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

Terms offered: Fall 2017, Fall 2015, Spring 2011
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 C223 Agrarian Questions 4 Units

Terms offered: Spring 2024

The seminar offers an introduction to the interdisciplinary field of critical agrarian and food studies, which brings together Marxian agrarian political economy, historical and political sociology, postcolonial and subaltern studies, post structural feminist theory, critical development studies, and political ecology. Students should come out of this class with a genealogical understanding of key debates and emergent issues in the field. Our goal is to think theoretically and empirically about the social relations of land, labor, and livelihoods and how these relations articulate with broader political economic processes.

Rules & Requirements

Credit Restrictions: Students will receive no credit for ENE,RES C223 after completing ESPM 223. A deficient grade in ENE,RES C223 may be removed by taking ESPM 223.

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: Chung

Also listed as: ENE,RES C223

ESPM C225 Isotopics 2 Units

Terms offered: Fall 2025, Fall 2024, Fall 2023, Fall 2022

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

Terms offered: Spring 2025, Fall 2022, Spring 2018

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 without restriction.

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

Terms offered: Spring 2023, Fall 2020

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

Terms offered: Spring 2025, Spring 2021, Spring 2020
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

Terms offered: Spring 2022, Spring 2021, Fall 2020
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 231 Behavioral Foundations for Environmental Policy and Wildlife Conservation 2 Units

Terms offered: Spring 2025
This course explores how social psychology, behavioral economics, and decision-making theories
contribute to environmental policy and wildlife conservation. Students will examine topics such as
using behavioral insights to promote pro-environmental actions like recycling and designing
messages for endangered species. Aimed at future policymakers, business leaders, and environmental
professionals, the course integrates theory with real-world applications, equipping participants to
tackle global environmental challenges and foster responsible environmental stewardship.
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: Echeverri Ochoa

ESPM 232 Indigenizing Cultural Heritage Management and Land Stewardship 4 Units

Terms offered: Spring 2025, Spring 2023, Spring 2022
The purpose of this course is to examine heritage management and the stewardship of cultural and ecological resources. We will discuss cultural and environmental laws, Indigenous knowledge, epistemologies, and frameworks for approaching research and compliance with tribes, agencies, and organizations. Themes include culture-nature interrelationships, intersections between Indigenous and non-Indigenous ways of knowing, and building toward futures that are more inclusive of these Indigenous perspectives and practices. How can we decolonize and Indigenize our respective disciplines? At the core of successful research and resource management with Indigenous peoples is the ability to work collaboratively, reflexively, and responsively.
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: Nelson

ESPM 234 Geographic Information Systems for Environmental Science and Management 3 Units

Terms offered: Fall 2022, Fall 1996

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/Graduate

Grading: Letter grade.

Instructor: Kelly

ESPM C234 Green Chemistry: An Interdisciplinary Approach to Sustainability 3 Units

Terms offered: Spring 2016, Spring 2015, Spring 2014, Spring 2013

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 235 Indigenous Environmental Studies 4 Units

Terms offered: Spring 2022, Spring 2021

This seminar examines the relationship between Indigenous societies and the environments that shape, and are shaped by them. We will discuss defining and supporting sustainability; what environmental governance has looked like as tribal nations and settler governments have grappled for control over natural resources; issues around developing and utilizing “natural resources” on tribal land; how traditional environmental knowledge (TEK) and Indigenous science can be applied in environmental co-management; the struggle to achieve environmental justice and how Indigenous communities fit into the broader EJ movement; and the broader struggle to protect the waters so vital to the perpetuation of healthy communities.

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: Hoover

ESPM 242 Current Topics in Insect Biology 2 Units

Terms offered: Fall 2025, Spring 2025

Social insects display sophisticated, complex, and fascinating behaviors that have contributed to
their abundance and ecological success. Many species have also become valuable model systems
for studying a variety of different topics in behavioral ecology, chemical ecology, the genetic and
genomic basis of behavior, conservation biology, evolutionary biology, agroecology, and much
more. In this class, we will review recent research that has used social insects as model systems,
with a focus on ants, bees, and wasps, discussing one or two publications in depth during each
class.

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.

Instructor: Tsutsui

ESPM 244 Spatial Ecology 3 Units

Terms offered: Fall 2024, Fall 2023, Fall 2021
Spatial heterogeneity is a key feature of many ecological patterns and processes. This course will explore how spatial data and analysis can answer fundamental questions in ecology, evolution, and conservation through discussions of recent research and workshops on performing spatial analysis in R. Topics to be covered include spatial autocorrelation, habitat fragmentation, population dynamics, conservation and landscape genetics, simulation methods, niche modeling, and spatial statistics.

Rules & Requirements

Prerequisites: Graduate Student Standing

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: Letter grade.

Instructor: Wang

ESPM 248 Special Topics and Advanced Seminars in Entomology 0.0 Units

Terms offered: Prior to 2007

Rules & Requirements

Repeat rules: Course may be repeated for credit without restriction.

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: Letter grade.

ESPM 249 Bioethics, Law, and the Life Sciences 3 Units

Terms offered: Spring 2013
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

Terms offered: Fall 2003, Fall 2001, Fall 1999
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

Terms offered: Spring 2020, Spring 2019, Spring 2013
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 252 Animal Studies in Multispecies Worlds 4 Units

Terms offered: Spring 2008, Spring 2006, Spring 2005

Rules & Requirements

Credit Restrictions: Students will receive no credit for ESPM 252 after completing ESPM 252. A deficient grade in ESPM 252 may be removed by taking ESPM 252.

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: Taylor Elias

ESPM C252 Topics in Science and Technology Studies 3 Units

Terms offered: Fall 2025, Fall 2024, Fall 2023, Fall 2022, Fall 2014, Fall 2013

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 without restriction.

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

Terms offered: Spring 2023, Spring 2022, Spring 2021

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 4 Units

Terms offered: Fall 2025, Spring 2025, Spring 2024, Spring 2016

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

Terms offered: Spring 2020, Fall 2014, Spring 2014, Fall 2013
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

Terms offered: Fall 2011, Spring 2011, Spring 2009
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 257 Creative Writing in Environmental Science 3 Units

Terms offered: Spring 2025, Spring 2024, Spring 2002
Writing is one of the most compelling skills we learn as environmental scientists and communicators. Yet, the formulaic and monotonous nature of composing scientific peer-reviewed publications can constrain creative and imaginative prose, features of our writing that draw in audiences outside academia. The goal of this graduate seminar is to provide a broad, introductory exploration to creative and environmental science writing. We will explore, discuss, and workshop multiple literary genres – from poetry to creative fiction and nonfiction – as both a means of diversifying our writing craft and improving narrative structure in academic writing.

Rules & Requirements

Repeat rules: Course may be repeated for credit without restriction.

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: Schell

ESPM 258 Race, Science, and Resource Policy 3 Units

Terms offered: Fall 2017, Fall 2015, Fall 2014
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 without restriction.

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

Terms offered: Spring 2023, Fall 2022, Spring 2022
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

Terms offered: Fall 2024, Fall 2023, Fall 2022
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

Terms offered: Fall 2025, Fall 2024, Fall 2020
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

Terms offered: Fall 2024, Spring 2024, Spring 2023
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

Terms offered: Spring 2013, Spring 2012, Spring 2011
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

Terms offered: Fall 2016, Fall 2010, Fall 2008
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 without restriction.

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

Terms offered: Spring 2025, Spring 2022, Fall 2020
Effect of fire on ecology of forest and rangeland.

Rules & Requirements

Repeat rules: Course may be repeated for credit without restriction.

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 C266 Political Ecologies of Climate Change Adaptation 3 Units

Terms offered: Fall 2023
As the climate crisis escalates and mitigation efforts stagnate, adaptation has come to the forefront of public debates and funding priorities. This course will explore the varied political ecologies of climate change adaptation. By drawing on political ecology, this course will include both foundational and emerging scholarship that explores how climate change adaptation is shaping and being shaped by the material impacts of climate change, the political economy of climate governance and finance, and the agency of experts, funders, promoters, and the individuals and collectives adapting to climate change. We will examine the history of climate change adaptation concepts and governance while also exploring emerging frontiers in the field.

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: Mills-Novoa

Also listed as: ENE,RES C266

ESPM 268 Seminar in Range Ecology 2 Units

Terms offered: Fall 2024, Fall 2023, Fall 2021
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 without restriction.

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

Terms offered: Fall 2019, Fall 2018, Fall 2014
The course provides a discussion of the advanced topics in remote sensing and image analysis for environmental applications. Topics include airborne and satellite remote sensing data acquisition; spatial, spectral, radiometric, and temporal resolutions; image display systems, classification algorithms; accuracy assessment; and integration in a geospatial context.Students will select either a lab assignment or conduct a project using multispectral, Hyperspectral, RADAR, SAR, LiDAR, etc. data, will write a report and make a presentation to the class; If project option is selected, a working knowledge of ERDAS Imagine or another image processing system is required. The Geospatial Innovation Facility (GIF) will be available to all students.

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: Khorram

ESPM C273 Science and Technology Studies Research Seminar 3 Units

Terms offered: Spring 2025, Spring 2024, Spring 2023, Spring 2022, Spring 2017, Spring 2016, Spring 2015
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 without restriction.

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

Terms offered: Fall 2025, Fall 2023, Spring 2018
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

Terms offered: Fall 2018, Fall 2017, Fall 2016
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, group projects, 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 without restriction.

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: Kremen

ESPM 278 Range Assessment 3 Units

Terms offered: Fall 2024, Fall 2023, Fall 2022
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

Terms offered: Spring 2025, Spring 2024, Spring 2020
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

Terms offered: Spring 2022, Fall 2018, Fall 2016
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 without restriction.

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

Terms offered: Fall 2025, Fall 2024, Fall 2023
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 without restriction.

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

Terms offered: Spring 2020, Spring 2019, Spring 2018, Spring 2017, Spring 2016, Spring 2015

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

Terms offered: Fall 2009, Fall 2007, Fall 2002

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 288 Reproducible and Collaborative Data Science 3 Units

Terms offered: Spring 2025, Spring 2024, Spring 2022

Introduction to principles and tools for reproducible and collaborative data science, including data curation and cleaning, version control, virtual machines, scripted work flow, hypothesis-driven exploratory data analysis, data visualization, and communication. Students will be introduced to git, Python,R, and LaTeX. The class will navigate a series of problem-driven analyses, focused on case studies and independent projects, leading to reproducible products that allow updated analyses as new data become available. Projects by first year trainees will be presented at the Annual Symposium.

Rules & Requirements

Prerequisites: Previous experience in R programming or equivalent background expected

Hours & Format

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

Additional Details

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

Grading: Letter grade.

Instructor: Boettiger

ESPM C289 Applied Remote Sensing 3 Units

Terms offered: Spring 2025, Spring 2024, Spring 2023, Spring 2022
This course consists of one lecture and one computer lab per week introducing fundamental principles and methods of environmental remote sensing and their practical applications. We will explore strategies for working with different types of remote sensing data and extracting image-based landscape information for various environmental research and planning objectives. This course focuses largely on local to regional scale applications of remote sensing in ecology, environmental planning and design, civil & environmental engineering and natural resource management.

Objectives & Outcomes

Course Objectives:
Learn practical skills and techniques to extracting landscape information from remote sensing data as image interpretation, classification, accuracy assessment, mapping and change analysis.
Become familiar with different types of data and instruments in remote sensing and learn how to choose the optimal remote sensing data and procedure for various landscape and environmental analysis applications.

Explore traditional and novel remote sensing techniques and their use in landscape planning, environmental studies and natural resource management.
Develop the capacity to work with the remote sensing literature and synthesize the relevant knowledge across different studies.

Rules & Requirements

Prerequisites: An introductory GIS course such as LA C188/Geography C188 or equivalent

Credit Restrictions: Students will receive no credit for LD ARCH C289 after completing LD ARCH 289. A deficient grade in LD ARCH C289 may be removed by taking LD ARCH 289.

Hours & Format

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

Additional Details

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

Grading: Letter grade.

Instructor: Dronova

Also listed as: LD ARCH C289

ESPM 290 Special Topics in Environmental Science, Policy, and Management 1 - 4 Units

Terms offered: Fall 2025, Spring 2025, Fall 2024
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 without restriction.

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

Terms offered: Spring 2022, Spring 2021, Fall 2020
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 without restriction.

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

Terms offered: Fall 2024, Fall 2023, Fall 2022
Advanced study of research topics which vary each semester.

Rules & Requirements

Prerequisites: Consent of instructor

Repeat rules: Course may be repeated for credit without restriction.

Hours & Format

Fall and/or spring: 15 weeks - 3-18 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

Terms offered: Fall 2025, Summer 2025, Summer 2025 3 Week Session
Individual research under the supervision of a faculty member.
Rules & Requirements

Prerequisites: Consent of instructor

Repeat rules: Course may be repeated for credit without restriction.

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

Terms offered: Summer 2021 Second 6 Week Session, Summer 2020 Second 6 Week Session, Summer 2016 8 Week Session
Individual research under the supervision of a faculty member.
Rules & Requirements

Prerequisites: Consent of instructor

Repeat rules: Course may be repeated for credit without restriction.

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

Terms offered: Fall 2021, Spring 2021, Fall 2020
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 without restriction.

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

Terms offered: Fall 2009, Fall 2007
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

Terms offered: Fall 2025, Fall 2024, Fall 2023
This course is designed to better prepare graduate students for their GSI appointments, and to foster graduate student professional development in academia.The disciplinary theme for the course is on interdisciplinary teaching and multiple ways of teaching in the environmental fields. GSIs are introduced to their roles and responsibilities as instructors in these various learning environments, and to resources to enhance teaching. The course facilitates experimentation with different teaching methods, serves as a forum for sharing information on pedagogical practices, and provides feedback on teaching. As requested by students, the course is front-loaded with practical tools for classroom teaching.

Hours & Format

Fall and/or spring: 15 weeks - 2 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.

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

ESPM 376 PhD as Process: holistic professional way finding 2 Units

Terms offered: Fall 2025, Fall 2024
The goal of this course is to provide integrative
support for thriving in the PhD. What are strategies for efficiency and effectiveness? What are approaches for balancing personal and professional
growth? How can we address anxiety, burn-out, and isolation? How can we
prepare for a shifting career landscape? The course will offer strategies for time
and energy management, staying grounded during difficult times, overcoming
writer's block, nurturing intrinsic motivation, combating decision fatigue, saying
no, addressing fear, preparing for the job market, and supporting broader

cultural change in academia.

Objectives & Outcomes

Course Objectives: Apply these strategies to a landscape of change. Much is changing in
academia and the world, and we can no longer look at our individual success
in a vacuum. We will help you reconcile your personal path forward with broader questions in our communities and institutions.
Explore general strategies for success. Each PhD is unique, but there are
common strategies for success. We will examine approaches (supported by
cognitive science and psychology) to help you maximize productivity.
Explore specific strategies for fulfilment. While there are shared strategies for success, these must be implemented in a highly individualized
way. We will help you develop tools for balancing your personal and professional needs and bringing more authenticity to your career.

Hours & Format

Fall and/or spring: 15 weeks - 2 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.

Instructor: Rosenblum

ESPM 400 Professional Training in Research 1 - 6 Units

Terms offered: Spring 2023, Spring 2022, Spring 2021
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 without restriction.

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

Terms offered: Spring 2022, Spring 2021, Spring 2020
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 without restriction.

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

Terms offered: Spring 2020, Spring 2019, Spring 2018
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: Course may be repeated for credit without restriction.

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.