

# Society and Environment

## Bachelor of Science (BS)

Social and environmental problems are deeply intertwined. This major introduces students to the main approaches and theory for environmental social sciences including how social science tools can be applied to environmental problems and how social science theories contribute to understanding environmental problems. At the upper division level there are three major areas of concentration. Students are exposed to all three areas and choose to focus in one: US Environmental Policy and Management, Global Environmental Politics, or Justice and Sustainability.

Society and Environment graduates are well-prepared for careers in fields such as environmental consulting, education, health, or law; community, urban, or regional planning; and other related areas of environmentalism in public agencies, nonprofit conservation organizations, and private companies. Graduates are well-qualified for a variety of graduate programs, including law school.

## Admission to the Major

Freshman students may apply directly to the major, or they may select the College of Natural Resource's undeclared option and declare the major by the end of their fourth semester. For further information regarding how to declare the major after admission including information on a change of major or change of college, please see the College of Natural Resources Undergraduate Student Handbook (<https://nature.berkeley.edu/handbook>).

## Honors Program

Students with a cumulative grade point average (GPA) of 3.6 or higher may enroll in the College of Natural Resources honors program (H196) once they have reached upper division standing. To fulfill the program requirements, students design, conduct, and report on an individual research project working with a faculty sponsor. For further information on the honors program, please see the College of Natural Resources website ([http://nature.berkeley.edu/site/honors\\_program.php](http://nature.berkeley.edu/site/honors_program.php)).

## Minor Program

There is no minor program in Society and Environment.

## Other Majors and Minors Offered by the Department of Environmental Science, Policy, and Management

Conservation and Resource Studies (<http://guide.berkeley.edu/archive/2016-17/undergraduate/degree-programs/conservation-resource-studies>) (Major and Minor)

Environmental Sciences (<http://guide.berkeley.edu/archive/2016-17/undergraduate/degree-programs/environmental-sciences>) (Major only)

Forestry and Natural Resources (<http://guide.berkeley.edu/archive/2016-17/undergraduate/degree-programs/forestry-natural-resources>) (Major and Minor)

Molecular Environmental Biology (<http://guide.berkeley.edu/archive/2016-17/undergraduate/degree-programs/molecular-environmental-biology>) (Major only)

In addition to the University, campus, and college requirements listed on the College Requirements tab, students must fulfill the below requirements specific to their major program.

## General Guidelines

1. All courses taken to fulfill the major requirements below must be taken for letter graded credit, other than courses listed which are offered on a *Pass/No Pass* basis only. Other exceptions to this requirement are noted as applicable.
2. A minimum cumulative grade point average (GPA) of 2.0 is required.
3. A minimum GPA of 2.0 in upper division major requirements is required.
4. At least 15 of the 36 required upper division units must be taken in the College of Natural Resources (EEP, ERG, ES, ESPM, NAT RES, NST, PMB).
5. A maximum of 16 units of independent study (courses numbered 97, 98, 99, 197, 198, and 199) may count toward graduation, with a maximum of 4 units of independent study per semester.
6. No more than 1/3 of the total units attempted at UC Berkeley may be taken *Pass/No Pass*. This includes units in the Education Abroad Program and UC Intercampus Visitor or Exchange Programs.
7. A maximum of 4 units of physical education courses will count toward graduation.

For information regarding residence requirements and unit requirements, please see the College Requirements tab.

## Lower Division Requirements

### ESPM Environmental Science Core (cannot overlap with breadth)

|                              |  |   |
|------------------------------|--|---|
| Select one of the following: |  | 4 |
| ESPM 2                       | The Biosphere  |   |
| ESPM 6                       | Environmental Biology  |   |
| L & S C30V/<br>ESPM C10      | Environmental Issues   |   |
| ESPM 15                      | Introduction to Environmental Sciences (formerly ENV SCI 10) |   |
| L & S/ESPM<br>C46            | Climate Change and the Future of California                  |   |

### ESPM Social Science Core (cannot overlap with breadth)

|                              |   |   |
|------------------------------|---|---|
| Select one of the following: |   | 4 |
| ESPM C12/<br>ENGLISH C77     | Introduction to Environmental Studies                   |   |
| L & S C30U/<br>ESPM C11      | Americans and the Global Forest                         |   |
| ESPM 50AC                    | Introduction to Culture and Natural Resource Management |   |
| ESPM 60                      | Environmental Policy, Administration, and Law           |   |

### Math or Statistics

|                              |                                |   |
|------------------------------|--------------------------------|---|
| Select one of the following: |                                | 4 |
| MATH 16A                     | Analytic Geometry and Calculus |   |
| MATH 1A                      | Calculus                       |   |

|             |   |
|-------------|---|
| MATH 10A    | Methods of Mathematics: Calculus, Statistics, and Combinatorics         |
| STAT 2      | Introduction to Statistics  |
| STAT C8     | Foundations of Data Science   |
| STAT 20     | Introduction to Probability and Statistics                              |
| STAT 21     | Introductory Probability and Statistics for Business                    |
| PB HLTH 140 | Course Not Available  |
| PB HLTH 142 | Introduction to Probability and Statistics in Biology and Public Health |

**Economics<sup>1</sup>**

Select one of the following:

|                    |  |
|--------------------|--|
| ENVECON C1/ECON C3 | Introduction to Environmental Economics and Policy |
| ECON 1             | Introduction to Economics                          |
| ECON 2             | Introduction to Economics--Lecture Format          |

<sup>1</sup> The economics course may also fulfill the social & behavioral sciences breadth requirement.

## Five-Course Breadth of Knowledge Requirement

Select one course from each of the five breadth categories below. Click here (<http://ls-advise.berkeley.edu/requirement/7breadth.html>) for complete listings. The American Cultures requirement may overlap with any of the following courses. These courses cannot overlap with other requirements.

- Social & Behavioral Sciences (3-4 units)
- International Studies (3-4 units)
- Physical Sciences (3-4 units)
- Arts & Literature, Historical Studies, or Philosophy & Values (3-4 units)
- Biological Science (3-4 units)

## Upper Division Requirements

**Area of Concentration**

Select seven courses from one Area of Concentration (see below)

**Environmental or Political Economics**

Select one of the following:

|                            |  |
|----------------------------|--|
| DEV STD C100/<br>GEOG C112 | History of Development and Underdevelopment                |
| ECON C125/<br>ENVECON C1C  | Environmental Economics                                    |
| ENE,RES 180                | Ecological Economics in Historical Context                 |
| ENVECON 100                | Microeconomic Theory with Application to Natural Resources |
| ENVECON C101/<br>ECON C125 | Environmental Economics                                    |
| ENVECON 131                | Globalization and the Natural Environment                  |
| ENVECON 140                | Economics of Race, Agriculture, and the Environment        |
| ENVECON 153                | Population, Environment, and Development                   |
| ENVECON 161                | Advanced Topics in Environmental and Resource Economics    |

|                            |  |
|----------------------------|--|
| GEOG 110                   | Economic Geography of the Industrial World                 |
| GEOG C112/<br>DEV STD C100 | History of Development and Underdevelopment                |
| GPP 115                    | Global Poverty: Challenges and Hopes in the New Millennium |
| POLECON 100                | Classical Theories of Political Economy                    |
| POLECON 101                | Contemporary Theories of Political Economy                 |
| POL SCI 126A               | International Political Economy                            |
| POL SCI 139B               | Development Politics                                       |
| PUB POL C103               | Wealth and Poverty   |

**Capstone Presentation**

|           |  |   |
|-----------|--|---|
| ESPM 194B | Capstone Course in Society and Environment (Research or poster presentation (final semester of the senior year)) | 1 |
|-----------|--|---|

## Area of Concentration Requirement

Students select a total of seven courses (including their core course) in the areas of concentration. In consultation with a faculty adviser, students choose their primary area of concentration and:

1. Select one of the ESPM courses in their primary area as their core course.
2. Select three additional courses from that area (ESPM or non-ESPM) to constitute the primary area of concentration.
3. Choose three additional courses (ESPM or non-ESPM), with at least one course from each of the other two concentrations.

At least three of the seven courses (12 units) in the areas of concentration must come from the approved ESPM courses.

**1. US Environmental Policy and Management****Approved ESPM courses**

|  |   |   |
|--|---|---|
| ESPM 102C  | Resource Management   | 4 |
| ESPM 102D  | Climate and Energy Policy                                     | 4 |
| ESPM 160AC   | American Environmental and Cultural History                   | 4 |
| ESPM 161   | Environmental Philosophy and Ethics                           | 4 |
| ESPM 186   | Management and Conservation of Rangeland Ecosystems           | 4 |
| ESPM C191/<br>HISTART C189/<br>AMERSTD C112F/<br>UGIS C136 | The American Forest: Its Ecology, History, and Representation | 4 |

**Approved non-ESPM courses**

|                               |  |   |
|-------------------------------|--|---|
| AMERSTD/<br>UGBA C172         | History of American Business                               | 3 |
| UGBA 107                      | The Social, Political, and Ethical Environment of Business | 3 |
| UGBA/<br>AMERSTD C172         | History of American Business                               | 3 |
| CY PLAN 110                   | Introduction to City Planning                              | 4 |
| CY PLAN 113A                  | Economic Analysis for Planning                             | 3 |
| CY PLAN 113B                  | Community and Economic Development                         | 3 |
| CY PLAN 118AC                 | The Urban Community  | 4 |
| ENE,RES C100/<br>PUB POL C184 | Energy and Society   | 4 |
| ENE,RES 175                   | Water and Development                                      | 4 |

|                       |   |   |
|-----------------------|---|---|
| ENE,RES 180           | Ecological Economics in Historical Context (formerly C180)  | 3 |
| ENVECON/<br>ECON C102 | Natural Resource Economics  | 4 |
| ENVECON/IAS<br>C118   | Introductory Applied Econometrics   | 4 |
| ENVECON 141           | Agricultural and Environmental Policy   | 4 |
| ENVECON 152           | Advanced Topics in Development and International Trade  | 3 |
| ENVECON 153           | Population, Environment, and Development  | 3 |
| ENVECON 162           | Economics of Water Resources  | 3 |
| GEOG 110              | Economic Geography of the Industrial World (formerly C110)  | 4 |
| GEOG 130              | Food and the Environment  | 4 |
| HISTORY 120AC         | American Environmental and Cultural History   | 4 |
| HISTORY 122AC         | Antebellum America: The Advent of Mass Society  | 4 |
| HISTORY 124A          | The Recent United States: The United States from the Late 19th Century to the Eve of World War II | 4 |
| HISTORY 135           | American Indian History: Precontact to the Present  | 4 |
| LEGALST 100           | Foundations of Legal Studies  | 4 |
| LEGALST 145           | Law and Economics I   | 4 |
| LEGALST 147           | Law and Economics II  | 4 |
| LEGALST 176           | Twentieth-Century American Legal and Constitutional History                                       | 4 |
| LEGALST 178           | Seminar on American Legal and Constitutional History  | 3 |
| POL SCI 114A          | Theories of Governance: Late 20th Century   | 4 |
| POL SCI 161           | Public Opinion, Voting and Participation  | 4 |
| PUB POL C103          | Wealth and Poverty  | 4 |
| PUB POL C184          | Energy and Society  | 4 |
| SOCIOLOG 110          | Organizations and Social Institutions   | 4 |
| SOCIOLOG 131AC        | Race and Ethnic Relations: U.S. American Cultures   | 4 |
| SOCIOLOG 144          | Ethnic Politics   | 4 |
| SOCIOLOG 145AC        | Social Change: American Cultures (formerly 170AC)   | 4 |
| SOCIOLOG 186          | American Society (formerly 180)   | 4 |

## 2. Global Environmental Politics

### Approved ESPM courses

|          |  |   |
|----------|--|---|
| ESPM 151 | Society, Environment, and Culture      | 4 |
| ESPM 162 | Bioethics and Society                  | 4 |
| ESPM 165 | International Rural Development Policy | 4 |
| ESPM 168 | Political Ecology                      | 4 |
| ESPM 169 | International Environmental Politics   | 4 |

### Approved non-ESPM Courses:

|               |   |   |
|---------------|---|---|
| AFRICAM 131   | Caribbean Societies and Cultures                        | 3 |
| ANTHRO 137    | Energy, Culture and Social Organization                 | 4 |
| ANTHRO 139    | Controlling Processes                                   | 4 |
| CY PLAN C139  | Urban and Sub-national Politics in Developing Countries | 4 |
| EDUC 186AC    | The Southern Border                                     | 4 |
| ETH STD 159AC | The Southern Border                                     | 4 |
| ENVECON 131   | Globalization and the Natural Environment               | 3 |

|              |   |   |
|--------------|---|---|
| GWS 141      | Interrogating Global Economic "Development"                             | 4 |
| GEOG 130     | Food and the Environment  | 4 |
| GEOG 137     | Top Ten Global Environmental Problems                                   | 4 |
| GEOG 138     | Global Environmental Politics   | 4 |
| GEOG 159AC   | The Southern Border   | 4 |
| IAS 102      | Scope and Methods of Research in International and Area Studies         | 4 |
| LEGALST 140  | Property and Liberty  | 4 |
| LEGALST 179  | Comparative Constitutional Law  | 4 |
| LEGALST 182  | Law, Politics and Society   | 4 |
| POL SCI 138E | The Varieties of Capitalism: Political Economic Systems of the World    | 4 |
| POL SCI C139 | Urban and Sub-national Politics in Developing Countries (formerly 139D) | 4 |
| RHETOR 107   | Rhetoric of Scientific Discourse (formerly 174)                         | 4 |
| SOCIOLOG 102 | Sociological Theory II (formerly 101B)                                  | 5 |
| SOCIOLOG 127 | Development and Globalization (formerly 172)                            | 4 |

## 3. Justice and Sustainability

### Approved ESPM courses

|                            |   |   |
|----------------------------|---|---|
| ESPM 117                   | Urban Garden Ecosystems   | 4 |
| ESPM 155AC                 | Sociology and Political Ecology of Agro-Food Systems            | 4 |
| ESPM 163AC                 | Environmental Justice: Race, Class, Equity, and the Environment | 4 |
| ESPM 166                   | Natural Resource Policy and Indigenous Peoples                  | 4 |
| ESPM C167/<br>PB HLTH C160 | Environmental Health and Development                            | 4 |

### Approved non-ESPM Courses:

|                            |  |     |
|----------------------------|--|-----|
| ANTHRO 148                 | Anthropology of the Environment  | 4   |
| DEV STD C100/<br>GEOG C112 | History of Development and Underdevelopment                                      | 4   |
| GWS 130AC                  | Gender, Race, Nation, and Health   | 4   |
| GEOG C112/<br>DEV STD C100 | History of Development and Underdevelopment                                      | 4   |
| HISTORY 135                | American Indian History: Precontact to the Present                               | 4   |
| LD ARCH 130                | Sustainable Landscapes and Cities  | 4   |
| LEGALST 100                | Foundations of Legal Studies   | 4   |
| LEGALST 103                | Theories of Law and Society  | 4   |
| LEGALST 107                | Theories of Justice  | 4   |
| LEGALST 187                | Diversity, Law & Politics  | 4   |
| NATAMST 100                | Native American Law  | 4   |
| POL SCI 124C               | Ethics and Justice in International Affairs                                      | 4   |
| POLECON 150                | Advanced Study in Political Economy of Industrial Societies (depends on topic)   | 4   |
| PB HLTH C160/<br>ESPM C167 | Environmental Health and Development   | 4   |
| PB HLTH 196                | Special Topics in Public Health (if topic is Nutrition in Developing Countries)  | 1-4 |
| SOCIOLOG 137AC             | Environmental Justice: Race, Class, Equity, and the Environment (formerly 128AC) | 4   |
| SOCIOLOG 145AC             | Social Change: American Cultures (formerly 170AC)                                | 4   |

SOCIOL 182 Elementary Forms of Racial Domination: International Perspectives (formerly 131B) 4

Reading and Composition (<http://guide.berkeley.edu/undergraduate/colleges-schools/natural-resources/reading-composition-requirement>)

In order to provide a solid foundation in reading, writing and critical thinking all majors in the College require two semesters of lower division work in composition. Students must complete a first-level reading and composition course by the end of their second semester and a second-level course by the end of their fourth semester.

Foreign Language (<http://guide.berkeley.edu/undergraduate/colleges-schools/natural-resources/foreign-language-requirement>) : **EEP Majors only**

The Foreign Language requirement is only required by Environmental Economics and Policy (EEP) majors. It may be satisfied by demonstrating proficiency in reading comprehension, writing, and conversation in a foreign language equivalent to the second semester college level, either by passing an exam or by completing approved course work.

Quantitative Reasoning (<http://guide.berkeley.edu/undergraduate/colleges-schools/natural-resources/quantitative-reasoning-requirement>) : **EEP Majors only**

The Quantitative Reasoning requirement is only required by Environmental Economics and Policy (EEP) majors. The requirement may be satisfied by exam or by taking an approved course.

## Undergraduate Breadth

Undergraduate breadth provide Berkeley students with a rich and varied educational experience outside of their major program. Breadth courses are built into CNR major requirements. The EEP major is the only CNR major that requires the entire 7 course breadth. As the foundation of a liberal arts education, breadth courses give students a view into the intellectual life of the University while introducing them to a multitude of perspectives and approaches to research and scholarship. Engaging students in new disciplines and with peers from other majors, the breadth experience strengthens interdisciplinary connections and context that prepares Berkeley graduates to understand and solve the complex issues of their day.

## High School Exam Credit

CNR students may apply high school exam credit (Advanced Placement, International Baccalaureate, A-Level Exam) towards many College and Major Requirements. See AP Exam Equivalency Chart and Higher Level IB Exam Equivalency Chart in the CNR Student Handbook (<https://nature.berkeley.edu/handbook>) for more information.

## Units Requirements

Students must complete at least 120 semester units of courses subject to certain guidelines:

- At least 36 units must be upper division courses, including a minimum of 15 units of upper division courses in the College of Natural Resources.
- A maximum of 16 units of Special Studies coursework (courses numbered 97, 98, 99, 197, 198, or 199) is allowed towards the 120 units; a maximum of four is allowed in a given semester.
- A maximum of 4 units of Physical Education from any school attended will count towards the 120 units.

- Students may receive unit credit for courses graded P (including P/ NP units taken through EAP) up to a limit of one-third of the total units taken and passed on the Berkeley campus at the time of graduation.

## Semester Unit Minimum

All CNR students must enroll in at least 13 units each fall and spring semester.

## Semester Unit Maximum

To request permission to take more than 19.5 units in a semester, please see the major adviser.

## Semester Limit

Students admitted as freshmen must graduate within 8 fall/spring semesters at UC Berkeley. Students admitted as transfer students must graduate within 4 fall/spring semesters at UC Berkeley. Students who go on EAP and UCDC can petition for additional semesters. Summer session, UC Extension and non-UC study abroad programs do not count towards this semester limit. Students approved for double majors or simultaneous degrees in two colleges may be granted an additional semester. CNR does not limit the number of total units a student can accrue.

## Senior Residence Requirement

After reaching senior status (90 semester units earned), students must complete at least 24 of the remaining 30 units in at least two semesters in residence at the College of Natural Resources. To count as residence, a semester must consist of at least four passed units. Inter-campus Visitor, Education Abroad Program, UC Berkeley Washington Program, and UC Berkeley Extension units do not count toward this requirement.

Students may use Summer Session to satisfy one semester of the Senior Residence Requirement, provided that four units of coursework are completed.

## Modified Senior Residence Requirement

Participants in the UC Education Abroad Program (UCEAP) or the UC Berkeley Washington Program may meet a modified Senior Residence Requirement by completing 24 of their final 60 semester units in residence (excluding UCEAP). At least 12 of these 24 units must be completed after senior status is reached.

Most students automatically fulfill the residence requirement by attending classes here for four years. In general, there is no need to be concerned about this requirement, unless students go abroad for a semester or year or want to take courses at another institution or through University Extension during their senior year. In these cases, students should make an appointment to see an adviser to determine how they can meet the Senior Residence Requirement.

## Grade Requirements

- A 2.0 UC GPA is required for graduation.
- A 2.0 average in all upper division courses required of the major program is required for graduation.

## S&E Freshman/Sophomore Sample Schedule

| Freshman  |      |       |   |       |
|---|------|-------|---|-------|
|   | Fall | Units | Spring  | Units |
| Reading and Composition course R1A                |      | 4     | Reading and Composition course R1B                | 4     |
| MATH 16A or STAT 2                                |      | 3-4   | Breadth   | 3-4   |
| ESPM Core #1                                      |      | 3-4   | ESPM Core #2                                      | 3-4   |
| Elective, Seminar, and/or Berkeley Connect        |      | 1-4   | Elective, Seminar, DeCal, and/or Berkeley Connect | 1-4   |
|   |      | 11-16 |   | 11-16 |
| Sophomore   |      |       |   |       |
|   | Fall | Units | Spring  | Units |
| ECON 1 or ENVECON C1                              |      | 4     | American Cultures                                 | 3-4   |
| Breadth   |      | 3-4   | Breadth   | 3-4   |
| Breadth   |      | 3-4   | Breadth   | 3-4   |
| Elective, Seminar, DeCal, and/or Berkeley Connect |      | 3-4   | Elective, Seminar, DeCal, and/or Berkeley Connect | 3-4   |
|   |      | 13-16 |   | 12-16 |
| Total Units: 47-64                                |      |       |   |       |

- Breadth Courses (select one 3-4 unit course from each of the five breadth categories below:**
  - Biological Sciences
  - Humanities: Arts & Literature, Historical Studies, or Philosophy & Values
  - International Studies
  - Physical Sciences
  - Social & Behavioral Sciences
- Remaining Requirements for Junior & Senior Years:**
  - Seven courses from the Area of Concentration Requirement
  - One course in Environmental or Political Economics
  - Senior Capstone Presentation ESPM 194B (spring senior year)
- Freshman/Sophomore Seminars: see FSS website (<http://fss.berkeley.edu>) for details
- Berkeley Connect: see Berkeley Connect website (<http://www.berkeleyconnect.berkeley.edu>) for details
- DeCal Courses: see DeCal website (<http://www.decal.org>) for details

## S&E Transfer Sample Schedule

(assumes the completion of IGETC or all lower division requirements)

| First Year             |      |       |                     |       |
|------------------------|------|-------|---------------------|-------|
|                        | Fall | Units | Spring              | Units |
| S&E Course             |      | 3-4   | S&E Course          | 3-4   |
| S&E Course             |      | 3-4   | S&E Course          | 3-4   |
| Elective               |      | 3-4   | Elective            | 3-4   |
| Berkeley Connect/DeCal |      | 1-4   | Elective            | 3-4   |
|                        |      | 10-16 |                     | 12-16 |
| Second Year            |      |       |                     |       |
|                        | Fall | Units | Spring              | Units |
| S&E Course             |      | 3-4   | S&E Course          | 3-4   |
| S&E Course             |      | 3-4   | S&E Course          | 3-4   |
| Elective               |      | 3-4   | S&E Senior Capstone | 1     |

| Elective | 3-4 Elective | 3-4   |
|----------|--------------|-------|
|          | 12-16        | 10-13 |

Total Units: 44-61

## S&E Transfer Sample Schedule - Major & Minor

(assumes the completion of IGETC or all lower division requirements)

| First Year             |      |       |                     |       |
|------------------------|------|-------|---------------------|-------|
|                        | Fall | Units | Spring              | Units |
| S&E Course             |      | 3-4   | S&E Course          | 3-4   |
| S&E Course             |      | 3-4   | S&E Course          | 3-4   |
| Minor Course           |      | 3-4   | Minor Course        | 3-4   |
| Berkeley Connect/DeCal |      | 1-4   | Minor Course        | 3-4   |
|                        |      | 10-16 |                     | 12-16 |
| Second Year            |      |       |                     |       |
|                        | Fall | Units | Spring              | Units |
| S&E Course             |      | 3-4   | S&E Course          | 3-4   |
| S&E Course             |      | 3-4   | S&E Course          | 3-4   |
| Minor Course           |      | 3-4   | S&E Senior Capstone | 1     |
| Minor Course           |      | 3-4   | Minor Course        | 3-4   |
|                        |      | 12-16 |                     | 10-13 |

Total Units: 44-61

## Learning Goals for the Major

The Society and Environment major develops students' capacities to theorize, analyze, interpret and influence social causes and consequences of environmental problems.

Society and Environment graduates gain understanding of the complex interactions between social, technological, and natural systems—conceptually, analytically, operationally, and articulately—for their individually chosen environmental problems and solutions. Graduates do the following:

- Learn about social processes that affect environmental equity, productivity, and stability for diverse peoples and generations.
- Form and link institutions of science, industry, technology, resource use, and societal governance.
- Work across the operational scales of environmental management and policy from the local to global.
- Shape operational responses, in policy and practice, to problems of environmental injustice, sustainability, and productivity.

Graduates are expected to play effective and credible roles in the public, professional, and scientific arenas in which they choose to work. These arenas include, for example, the politics, policy and management of urban, agricultural, forest, land and water systems and the particular sets of socioeconomic, scientific, industrial, and governmental institutions these engage.

In the College of Natural Resources, we provide holistic, individual advising services to prospective and current students who are pursuing major and minors in our college. We assist with a range of topics including course selection, academic decision-making, achieving personal and academic goals, and maximizing the Berkeley experience.

If you are looking to explore your options, or you are ready to declare a major, double major, or minor, contact the undergraduate adviser for your



intended major. Visit our website (<https://nature.berkeley.edu/advising/meet-cnr-advisors>) to explore all of our advising services.

## Society and Environment

### ESPM 2 The Biosphere 3 Units

Terms offered: Fall 2017, Fall 2016, Fall 2015

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.

The Biosphere: [Read More](#) [+]

#### 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.

The Biosphere: [Read Less](#) [-]

### ESPM 3 The Political Ecologies of Spain and California in Comparative Perspective 3 Units

Terms offered: Prior to 2007

This course introduces a political dimension to the study of ecology by exploring questions such as the political causes and effects of environmental policymaking and the unequal impact of environmental issues on different social, economic, cultural, or political groups among others.

The Political Ecologies of Spain and California in Comparative Perspective: [Read More](#) [+]

#### Objectives Outcomes

**Course Objectives:** Students will learn to apply the basic concepts developed by common-pool resources, coupled human and natural systems and landscape ecology theories to the study of water and land use. !

Students will study the environmental political process with regards to water and land use in California and Spain.

Students will apply a comparative perspective to the political and economic management of water and land use related issues in particular locations of Spain and California.

#### 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:** Firestone

The Political Ecologies of Spain and California in Comparative Perspective: [Read Less](#) [-]

## ESPM 5 FROM FARM TO TABLE: FOOD SYSTEMS IN A CHANGING WORLD 4 Units

Terms offered: Not yet offered

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 opportunities and costs of exports, and the way different groups access, use, and consume food.

FROM FARM TO TABLE: FOOD SYSTEMS IN A CHANGING WORLD:

[Read More](#) [+]

### 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

FROM FARM TO TABLE: FOOD SYSTEMS IN A CHANGING WORLD:  
[Read Less](#) [-]

## ESPM 6 Environmental Biology 3 Units

Terms offered: Fall 2017, Fall 2016, Fall 2015

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.

Environmental Biology: [Read More](#) [+]

### 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

Environmental Biology: [Read Less](#) [-]

## ESPM 9 Environmental Science Case Study Seminar 3 Units

Terms offered: Spring 2012, Spring 2011, Spring 2010

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

Environmental Science Case Study Seminar: [Read More](#) [+]

### Hours & Format

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

### Additional Details

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

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

**Instructors:** Fairfax, Spencer

Environmental Science Case Study Seminar: [Read Less](#) [-]

## ESPM C10 Environmental Issues 4 Units

Terms offered: Spring 2018, Spring 2017, Spring 2016

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.

Environmental Issues: [Read More](#) [+]

### 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

Environmental Issues: [Read Less](#) [-]

## 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.

Americans and the Global Forest: Read More [a]

### 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

Americans and the Global Forest: Read Less [-]

## ESPM C12 Introduction to Environmental Studies 4 Units

Terms offered: Fall 2016, Fall 2015, Fall 2014

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

Introduction to Environmental Studies: Read More [a]

### Rules & Requirements

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

### Hours & Format

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

### Additional Details

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

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

**Also listed as:** ENGLISH C77

Introduction to Environmental Studies: Read Less [-]

## ESPM 15 Introduction to Environmental Sciences 3 Units

Terms offered: Spring 2018, Summer 2017 Second 6 Week Session, Spring 2017

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.

Introduction to Environmental Sciences: Read More [a]

### 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

Introduction to Environmental Sciences: Read Less [-]

## ESPM 24 Freshman Seminar 1 Unit

Terms offered: Fall 2017, Spring 2017, Fall 2016

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.

Freshman Seminar: Read More [a]

### Rules & Requirements

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

### Hours & Format

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

### Additional Details

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

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

Freshman Seminar: Read Less [-]



## ESPM 39E Freshman/Sophomore Seminar 1 - 3 Units

Terms offered: Fall 2012

Freshman and sophomore seminars offer lower division students the opportunity to explore an intellectual topic with a faculty member and a group of peers in a small-seminar setting. These seminars are offered in all campus departments; topics vary from department to department and from semester to semester.

Freshman/Sophomore Seminar: Read More [+]

### Rules & Requirements

**Prerequisites:** Priority given to freshmen and sophomores

### Hours & Format

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

### Additional Details

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

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

Freshman/Sophomore Seminar: Read Less [-]

## ESPM 40 Insects and Human Society 3 Units

Terms offered: Spring 2018, Spring 2017, Summer 2016 8 Week Session

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.

Insects and Human Society: Read More [+]

### 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

Insects and Human Society: Read Less [-]

## ESPM 42 Natural History of Insects 3 Units

Terms offered: Fall 2017, Spring 2015, Spring 2014

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.

Natural History of Insects: Read More [+]

### 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. Alternative to final exam.

**Instructors:** Gillespie, Roderick, Will

Natural History of Insects: Read Less [-]

## 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.

Biological Control: Read More [+]

### 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

Biological Control: Read Less [-]

## ESPM C46 Climate Change and the Future of California 4 Units

Terms offered: Spring 2018, Spring 2016

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.

Climate Change and the Future of California: Read More [\[+\]](#)

### 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

Climate Change and the Future of California: Read Less [\[-\]](#)

## ESPM 50AC Introduction to Culture and Natural Resource Management 4 Units

Terms offered: Spring 2018, Fall 2017, Summer 2017 First 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.

Introduction to Culture and Natural Resource Management: Read More [\[+\]](#)

### 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

Introduction to Culture and Natural Resource Management: Read Less [\[-\]](#)

## ESPM 60 Environmental Policy, Administration, and Law 4 Units

Terms offered: Fall 2017, Fall 2016, Spring 2015

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.

Environmental Policy, Administration, and Law: Read More [\[+\]](#)

### 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.

Environmental Policy, Administration, and Law: Read Less [\[-\]](#)

## ESPM 72 Introduction to Geographic Information Systems 3 Units

Terms offered: Summer 2017 First 6 Week Session, Summer 2017 Second 6 Week Session, Spring 2017

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.

Introduction to Geographic Information Systems: Read More [\[+\]](#)

### 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

Introduction to Geographic Information Systems: Read Less [\[-\]](#)

## ESPM 78A Teaching and Learning Environmental Science 4 Units

Terms offered: Fall 2012, Fall 2011, Fall 2010

Introduces theories of cognitive development and the practices of curriculum design and lesson presentation for environmental education. Ecology and natural resource management provide the context of curriculum development. Students create lesson plans integrating core concepts and their knowledge of local environmental issues. Lessons are presented to Bay Area K-12 students in field and classroom settings.

Teaching and Learning Environmental Science: Read More [ + ]

### Rules & Requirements

**Prerequisites:** Consent of instructor

### Hours & Format

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

### Additional Details

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

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

**Instructor:** Spencer

Teaching and Learning Environmental Science: Read Less [ - ]

## 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.

Exploring Geospatial Data: Read More [ + ]

### 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

Exploring Geospatial Data: Read Less [ - ]

## 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

Data Sciences in Ecology and the Environment: Read More [+]

### 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

Data Sciences in Ecology and the Environment: Read Less [-]

## ESPM 90 Introduction to Conservation and Resource Studies Major 2 Units

Terms offered: Spring 2018, Fall 2017, Spring 2017

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.

Introduction to Conservation and Resource Studies Major: Read More [+]

### 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

Introduction to Conservation and Resource Studies Major: Read Less [-]

## ESPM 98 Directed Group Study in ESPM 1 - 3 Units

Terms offered: Fall 2016, Spring 2016, Fall 2015

Study of special topics that are not covered in depth in regular courses in the department.

Directed Group Study in ESPM: Read More [+]

### Rules & Requirements

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

**Repeat rules:** Course may be repeated for credit.

### 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.

Directed Group Study in ESPM: Read Less [-]

## ESPM 98BC Berkeley Connect 1 Unit

Terms offered: Spring 2018, Fall 2017, Spring 2017

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.

Berkeley Connect: Read More [+]

### 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.

Berkeley Connect: Read Less [-]

## ESPM 99 Supervised Independent Study and Research 1 - 3 Units

Terms offered: Fall 2016, Spring 2016, Fall 2015

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.

Supervised Independent Study and Research: Read More [\[+\]](#)

### 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.

### 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.

Supervised Independent Study and Research: Read Less [\[-\]](#)

## ESPM 100 Environmental Problem Solving 4 Units

Terms offered: Fall 2016, Fall 2015, Fall 2014

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. Environmental Problem Solving: Read More [\[+\]](#)

### 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

Environmental Problem Solving: Read Less [\[-\]](#)

## ESPM 100ES Introduction to the Methods of Environmental Science 4 Units

Terms offered: Spring 2018, Spring 2017, Spring 2016

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.

Introduction to the Methods of Environmental Science: Read More [\[+\]](#)

### 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

Introduction to the Methods of Environmental Science: Read Less [\[-\]](#)

## ESPM 102A Terrestrial Resource Ecology 4 Units

Terms offered: Fall 2013, Fall 2012, Fall 2011

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

Terrestrial Resource Ecology: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** Biology 1A-1B or equivalent

### Hours & Format

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

### Additional Details

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

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

**Instructor:** McBride

Terrestrial Resource Ecology: Read Less [\[-\]](#)



## ESPM 102B Natural Resource Sampling 2 Units

Terms offered: Fall 2017, Fall 2016, Fall 2015

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.

Natural Resource Sampling: [Read More](#) [+]

### 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

Natural Resource Sampling: [Read Less](#) [-]

## ESPM 102BL Laboratory in Natural Resource Sampling 2 Units

Terms offered: Fall 2017, Fall 2016, Fall 2015

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.

Laboratory in Natural Resource Sampling: [Read More](#) [+]

### 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

Laboratory in Natural Resource Sampling: [Read Less](#) [-]

## ESPM 102C Resource Management 4 Units

Terms offered: Spring 2017, Spring 2016, Spring 2015

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.

Resource Management: [Read More](#) [+]

### Rules & Requirements

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

### Hours & Format

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

### Additional Details

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

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

Resource Management: [Read Less](#) [-]

## ESPM 102D Climate and Energy Policy 4 Units

Terms offered: Spring 2018, Spring 2017, Spring 2016

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.

Climate and Energy Policy: [Read More](#) [+]

### Rules & Requirements

**Prerequisites:** One of the following is required: <BR/>- ESPM 60 Environmental Policy, Administration, and Law<BR/>- ENVECON C1 Introduction to Environmental Economics and Policy,<BR/>- POL SCI 1 Introduction to American Politics, or<BR/>- Consent of instructor

### Hours & Format

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

### Additional Details

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

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

**Instructor:** Meckling

Climate and Energy Policy: [Read Less](#) [-]

## ESPM C103 Principles of Conservation Biology 4 Units

Terms offered: Fall 2017, Summer 2017 Second 6 Week Session, Fall 2016

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.

Principles of Conservation Biology: Read More [+]

### 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

**Also listed as:** INTEGBI C156

Principles of Conservation Biology: Read Less [-]

## ESPM C104 Modeling and Management of Biological Resources 4 Units

Terms offered: 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).

Modeling and Management of Biological Resources: Read More [+]

### 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

Modeling and Management of Biological Resources: Read Less [-]

## ESPM 105A Sierra Nevada Ecology 4 Units

Terms offered: Summer 2017 8 Week Session, Summer 2016 10 Week Session, Summer 2016 8 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.

Sierra Nevada Ecology: Read More [+]

### 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

Sierra Nevada Ecology: Read Less [-]

## ESPM 105B Forest Measurements 1 Unit

Terms offered: Summer 2017 8 Week Session, Summer 2016 10 Week Session, Summer 2016 8 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.

Forest Measurements: Read More [+]

### 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.

Forest Measurements: Read Less [-]

## ESPM 105C Silviculture and Utilization 3 Units

Terms offered: Summer 2017 8 Week Session, Summer 2016 10 Week Session, Summer 2016 8 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.

Silviculture and Utilization: Read More [+]

### 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

Silviculture and Utilization: Read Less [-]

## ESPM 105D Forest Management and Assessment 3 Units

Terms offered: Summer 2017 8 Week Session, Summer 2016 10 Week Session, Summer 2016 8 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.

Forest Management and Assessment: Read More [+]

### 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.

Forest Management and Assessment: Read Less [-]

## ESPM C105 Natural History Museums and Biodiversity Science 3 Units

Terms offered: Fall 2017, Fall 2016, Fall 2015

(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.

Natural History Museums and Biodiversity Science: Read More [ + ]

### 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

Natural History Museums and Biodiversity Science: Read Less [ - ]

## ESPM 106 American Wildlife: Management and Policy in the 21st Century 3 Units

Terms offered: Spring 2018, Fall 2013, Fall 2012

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.

American Wildlife: Management and Policy in the 21st Century: Read More [ + ]

### 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

American Wildlife: Management and Policy in the 21st Century: Read Less [ - ]

## ESPM C107 Biology and Geomorphology of Tropical Islands 13 Units

Terms offered: Fall 2017, Fall 2016, Fall 2015

Natural history and evolutionary biology of island terrestrial and freshwater organisms, and of marine organisms in the coral reef and lagoon systems will be studied, and the geomorphology of volcanic islands, coral reefs, and reef islands will be discussed. Features of island biogeography will be illustrated with topics linked to subsequent field studies on the island of Moorea (French Polynesia).

Biology and Geomorphology of Tropical Islands: Read More [ + ]

### Hours & Format

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

### Additional Details

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

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

**Also listed as:** INTEGBI 158LF

Biology and Geomorphology of Tropical Islands: Read Less [ - ]

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

Terms offered: Fall 2016, Fall 2015, Fall 2014

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.

Trees: Taxonomy, Growth, and Structures: Read More [ + ]

### 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

Trees: Taxonomy, Growth, and Structures: Read Less [ - ]

## ESPM 108B Environmental Change Genetics 3 Units

Terms offered: Fall 2016, Fall 2015, Fall 2014

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 freeeware to evaluate molecular data.

Environmental Change Genetics: Read More [a]

### Rules & Requirements

**Prerequisites:** Biology 1A-1B or equivalents

### Hours & Format

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

### Additional Details

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

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

**Instructor:** Dodd

Environmental Change Genetics: Read Less [-]

## ESPM 110 Primate Ecology 4 Units

Terms offered: Spring 2011, Spring 2010, Spring 2008

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

Primate Ecology: Read More [a]

### Hours & Format

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

### Additional Details

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

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

**Instructor:** Milton

Primate Ecology: Read Less [-]

## ESPM 111 Ecosystem Ecology 4 Units

Terms offered: Spring 2018, Spring 2016, Spring 2015

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.

Ecosystem Ecology: Read More [a]

### 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

Ecosystem Ecology: Read Less [-]

## ESPM 112 Microbial Ecology 3 Units

Terms offered: Spring 2018, Spring 2017, Spring 2016

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.

Microbial Ecology: Read More [a]

### 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

Microbial Ecology: Read Less [-]



## ESPM 112L Microbial Ecology Lab 1 Unit

Terms offered: Spring 2018, Spring 2017, Spring 2016

Laboratory 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.

Microbial Ecology Lab: Read More [\[+\]](#)

### 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. Final exam required.

**Instructors:** Almeida, Banfield

Microbial Ecology Lab: Read Less [\[-\]](#)

## ESPM 113 Insect Ecology 3 Units

Terms offered: Spring 2017, Spring 2016, Spring 2015

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.

Insect Ecology: Read More [\[+\]](#)

### 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

Insect Ecology: Read Less [\[-\]](#)

## ESPM 114 Wildlife Ecology 3 Units

Terms offered: Spring 2018, Spring 2017, Spring 2016

Introduction to wildlife ecology and its relationship to management programs. Includes population, community, and ecosystem levels of organization, followed by selected case studies.

Wildlife Ecology: Read More [\[+\]](#)

### 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

Wildlife Ecology: Read Less [\[-\]](#)

## ESPM 115B Biology of Aquatic Insects 2 Units

Terms offered: Fall 2011, Fall 2009, Spring 2009

Identification and ecology of aquatic insects, including their role as indicators of environmental quality.

Biology of Aquatic Insects: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** Introductory course in a biological science

### Hours & Format

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

### Additional Details

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

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

**Instructor:** Resh

Biology of Aquatic Insects: Read Less [\[-\]](#)

## ESPM 115C Fish Ecology 3 Units

Terms offered: Fall 2011, Fall 2010, Fall 2009

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.

Fish Ecology: Read More [\[+\]](#)

### 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

Fish Ecology: Read Less [\[-\]](#)

## ESPM C115A Freshwater Ecology 3 Units

Terms offered: Spring 2018

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.

Freshwater Ecology: Read More [\[+\]](#)

### 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:** Power, Mary, Carlson, Stephanie

**Formerly known as:** Integrative Biology 171

**Also listed as:** INTEGBI C171

Freshwater Ecology: Read Less [\[-\]](#)

## ESPM C115C Fish Ecology 3 Units

Terms offered: Spring 2018, Spring 2017, Spring 2015

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.

Fish Ecology: Read More [\[+\]](#)

### Rules & Requirements

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

### Hours & Format

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

### Additional Details

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

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

**Instructor:** Carlson

**Also listed as:** INTEGBI C176L

Fish Ecology: Read Less [\[-\]](#)

## ESPM 116B Range Ecology, Improvements, and Management 3 Units

Terms offered: Fall 2017, Spring 2010, Spring 2006

The ecological basis for range management activities, considered in the context of western range ecosystem types. Specific range improvement and range management practices are discussed in the context of ecosystem processes.

Range Ecology, Improvements, and Management: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** One course in ecology

### Hours & Format

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

### Additional Details

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

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

**Instructors:** Allen-Diaz, Bartolome

Range Ecology, Improvements, and Management: Read Less [\[-\]](#)

## 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.

Tropical Forest Ecology: Read More [ + ]

### 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

Tropical Forest Ecology: Read Less [ - ]

## ESPM 117 Urban Garden Ecosystems 4 Units

Terms offered: Fall 2017, Summer 2017 First 6 Week Session, Summer 2017 Second 6 Week Session

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 preservation. 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.

Urban Garden Ecosystems: Read More [ + ]

### 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

Urban Garden Ecosystems: Read Less [ - ]

## ESPM 118 Agricultural Ecology 4 Units

Terms offered: Fall 2017, Fall 2016, Fall 2015

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.

Agricultural Ecology: Read More [ + ]

### Rules & Requirements

**Prerequisites:** Consent of instructor

### Hours & Format

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

### Additional Details

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

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

**Instructor:** Altieri

Agricultural Ecology: Read Less [ - ]

## ESPM 119 Chemical Ecology 2 Units

Terms offered: Fall 2015, Fall 2014, Fall 2013

Plant toxins and their effects on animals, hormonal interactions between plants and animals, feeding preferences, animal pheromones, and defense substances, biochemical interactions between higher plants, and phytoalexins and phytotoxins.

Chemical Ecology: Read More [ + ]

### Rules & Requirements

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

### Hours & Format

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

### Additional Details

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

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

**Instructor:** Kubo

Chemical Ecology: Read Less [ - ]

## ESPM 120 Soil Characteristics 3 Units

Terms offered: Fall 2016, Fall 2015, Fall 2014

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

Soil Characteristics: Read More [+]

### Rules & Requirements

**Prerequisites:** Chemistry 1A, 3A

### Hours & Format

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

### Additional Details

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

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

**Instructor:** Amundson

Soil Characteristics: Read Less [-]

## ESPM 121 Development and Classification of Soils 3 Units

Terms offered: Spring 2015, Spring 2009, Spring 2006

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.

Development and Classification of Soils: Read More [+]

### 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

Development and Classification of Soils: Read Less [-]

## ESPM 122 Field Study of Soil Development 1 Unit

Terms offered: Spring 2015, Spring 2009, Spring 2006

Five day-long Saturday field trips to locations in central California.

The field study of soil development and morphology. Methods of soil morphological descriptions; study of factors controlling soil development; relationship of soil morphology to land use; quaternary geology of central California; use of soils in dating landscapes.

Field Study of Soil Development: Read More [+]

### Hours & Format

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

### Additional Details

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

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

**Instructor:** Amundson

Field Study of Soil Development: Read Less [-]

## ESPM C125 Biogeography 4 Units

Terms offered: Spring 2018

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. Terms offered: Not yet offered

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.

Biogeography: Read More [+]

### Rules & Requirements

**Prerequisites:** BIO 1B

### Hours & Format

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

### Additional Details

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

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

**Instructor:** Gillespie

**Also listed as:** GEOG C148/INTEGBI C166

Biogeography: Read Less [-]

## ESPM C125 Biogeography 4 Units

Terms offered: Spring 2018

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. Terms offered: Not yet offered

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.

Biogeography: Read More [ + ]

### Rules & Requirements

**Prerequisites:** BIO 1B

### Hours & Format

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

### Additional Details

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

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

**Instructor:** Gillespie

**Also listed as:** GEOG C148/INTEGBI C166

Biogeography: Read Less [ - ]

## ESPM C126 Animal Behavior 4 Units

Terms offered: Fall 2017, Fall 2016, Fall 2015

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.

Animal Behavior: Read More [ + ]

### 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

Animal Behavior: Read Less [ - ]

## ESPM C128 Chemistry of Soils 3 Units

Terms offered: Spring 2018, Spring 2017, Spring 2016

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 bioavailability and pollutant detoxification. Chemical modeling of nutrient and pollutant soil chemistry. Applications to soil acidity and salinity.

Chemistry of Soils: Read More [ + ]

### Rules & Requirements

**Prerequisites:** Civil Engineering 111 or equivalent

### 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:** Sposito

**Also listed as:** CIV ENG C116

Chemistry of Soils: Read Less [ - ]



## ESPM C129 Biometeorology 3 Units

Terms offered: Fall 2016, Fall 2014, Fall 2012

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, CO<sub>2</sub>, atmospheric trace gases) between vegetation and the atmosphere. Plant biometeorology instrumentation and measurements are also discussed.

Biometeorology: [Read More](#) [+]

### 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

Biometeorology: [Read Less](#) [-]

## ESPM 130A Environmental Hydrology 4 Units

Terms offered: Not yet offered

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.

Environmental Hydrology: [Read More](#) [+]

### 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 discussion per week

### Additional Details

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

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

**Instructor:** D'Odorico

Environmental Hydrology: [Read Less](#) [-]

## ESPM C130 Terrestrial Hydrology 4 Units

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

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.

Terrestrial Hydrology: [Read More](#) [+]

### Rules & Requirements

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

### Hours & Format

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

### Additional Details

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

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

**Instructor:** Larsen

**Also listed as:** GEOG C136

Terrestrial Hydrology: [Read Less](#) [-]

## ESPM 131 Soil Microbial Ecology 3 Units

Terms offered: Spring 2018, Spring 2017, Spring 2016

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.

Soil Microbial Ecology: [Read More](#) [+]

### Rules & Requirements

**Prerequisites:** Biology 1A-1B

### Hours & Format

**Fall and/or spring:** 15 weeks - 3 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.

**Instructors:** Pallud, Firestone

Soil Microbial Ecology: [Read Less](#) [-]

## ESPM 132 Spider Biology 4 Units

Terms offered: Spring 2018, Spring 2017, Spring 2016

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.

Spider Biology: Read More [\[+\]](#)

### 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

Spider Biology: Read Less [\[-\]](#)

## ESPM C133 Water Resources and the Environment 3 Units

Terms offered: Spring 2018, Spring 2016

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

Water Resources and the Environment: Read More [\[+\]](#)

### Hours & Format

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

### Additional Details

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

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

**Instructor:** Larsen

**Also listed as:** GEOG C135

Water Resources and the Environment: Read Less [\[-\]](#)

## ESPM 134 Fire, Insects, and Diseases in Forest Ecosystems 3 Units

Terms offered: Spring 2018, Spring 2017, Spring 2016

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.

Fire, Insects, and Diseases in Forest Ecosystems: Read More [\[+\]](#)

### 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

Fire, Insects, and Diseases in Forest Ecosystems: Read Less [\[-\]](#)

## ESPM 137 Landscape Ecology 3 Units

Terms offered: Fall 2017, Fall 2016, Fall 2015

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

Landscape Ecology: Read More [\[+\]](#)

### Hours & Format

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

### Additional Details

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

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

**Instructor:** Wang

Landscape Ecology: Read Less [\[-\]](#)

## ESPM C138 Introduction to Comparative Virology 4 Units

Terms offered: Spring 2018, Spring 2017, Spring 2016

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.

Introduction to Comparative Virology: Read More [+]

### 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

Introduction to Comparative Virology: Read Less [-]

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

Terms offered: 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.

THE ENVIRONMENT AND THE SELF: AN ECO PRACTICUM: Read More [+]

### 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

THE ENVIRONMENT AND THE SELF: AN ECO PRACTICUM: Read Less [-]

## ESPM 140 General Entomology 4 Units

Terms offered: Spring 2018, Fall 2016, Fall 2015

Biology of insects, including classification of orders and common families, morphology, physiology, behavior, and ecology.

General Entomology: Read More [+]

### Rules & Requirements

**Prerequisites:** Introductory course in a biological science

### Hours & Format

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

### Additional Details

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

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

**Instructor:** Roderick

General Entomology: Read Less [-]

## ESPM 141 Development of Taxonomic Identification Keys and Natural Language Descriptions 2 Units

Terms offered: Prior to 2007

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

Development of Taxonomic Identification Keys and Natural Language

Descriptions: Read More [+]

### Rules & Requirements

**Prerequisites:** Prior knowledge of focus group for project

**Repeat rules:** Course may be repeated for credit.

### Hours & Format

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

### Additional Details

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

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

**Instructor:** Will

Development of Taxonomic Identification Keys and Natural Language Descriptions: Read Less [-]

## ESPM 142 Insect Behavior 3 Units

Terms offered: Fall 2017, Fall 2016, Fall 2015

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.

Insect Behavior: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** Biology 1A and 1B

### Hours & Format

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

### Additional Details

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

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

**Instructor:** Tsutsui

Insect Behavior: Read Less [\[-\]](#)

## ESPM 144 Insect Physiology 3 Units

Terms offered: Spring 2018, Spring 2017, Spring 2016

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.

Insect Physiology: Read More [\[+\]](#)

### 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

Insect Physiology: Read Less [\[-\]](#)

## ESPM 146L Medical and Veterinary Entomology Laboratory 1 Unit

Terms offered: Spring 2005, Spring 2003, Spring 2001

Laboratory identification of the major arthropod vectors of disease agents to humans and other animals, and study of the structural adaptations associated with free-living and parasitic stages and with blood feeding.

Medical and Veterinary Entomology Laboratory: Read More [\[+\]](#)

### Hours & Format

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

### Additional Details

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

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

**Instructor:** Lane

Medical and Veterinary Entomology Laboratory: Read Less [\[-\]](#)

## ESPM 147 Field Entomology 1 Unit

Terms offered: Fall 2017, Spring 2017, Fall 2016

This course introduces methods and techniques for collection and preparation of specimens and associated biological data, field observation, and recording and interpretation of arthropod behavior, relationships to habitats, and plant-arthropod interactions.

Field Entomology: Read More [\[+\]](#)

### Rules & Requirements

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

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

### Hours & Format

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

### Additional Details

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

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

Field Entomology: Read Less [\[-\]](#)

## 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.

Pesticide Chemistry and Toxicology: [Read More](#) [+]

### 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

Pesticide Chemistry and Toxicology: [Read Less](#) [-]

## ESPM C149 Molecular Ecology 4 Units

Terms offered: Spring 2010, Spring 2008, Spring 2005

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

Molecular Ecology: [Read More](#) [+]

### Rules & Requirements

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

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

### Hours & Format

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

### Additional Details

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

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

**Formerly known as:** 149

**Also listed as:** INTEGBI C149

Molecular Ecology: [Read Less](#) [-]

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

Terms offered: Spring 2018, Spring 2017, Spring 2016

Special topics in Environmental Science, Policy, and Management.

Topics may vary from semester to semester.

Special Topics in Environmental Science, Policy, and Management: [Read More](#) [+]

### Rules & Requirements

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

### Hours & Format

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

### Additional Details

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

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

Special Topics in Environmental Science, Policy, and Management: [Read Less](#) [-]

## ESPM 151 Society, Environment, and Culture 4 Units

Terms offered: Spring 2018, Spring 2013, Spring 2012

Issues, concepts, and processes pertaining to the diverse approaches to understanding the relationship between human society, culture, and the environment. Core ideas in and approaches to science, nature, culture, feminism, indigeneity, and postcolonialism as they pertain to the environment and society. Critical analysis and discussion of fundamental and contemporary issues and texts in the field.

Society, Environment, and Culture: [Read More](#) [+]

### 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.

Society, Environment, and Culture: [Read Less](#) [-]



## ESPM 152 Global Change Biology 3 Units

Terms offered: Spring 2018, Spring 2017, Spring 2016

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. Global Change Biology: Read More [ + ]

### Rules & Requirements

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

### Hours & Format

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

### Additional Details

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

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

**Instructor:** Rosenblum

Global Change Biology: Read Less [ - ]

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

Terms offered: Spring 2018, Fall 2016

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).

Sociology and Political Ecology of Agro-Food Systems: Read More [ + ]

### Hours & Format

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

### Additional Details

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

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

**Instructor:** De Master

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

Sociology and Political Ecology of Agro-Food Systems: Read Less [ - ]

## ESPM C156 Animal Communication 3 Units

Terms offered: Spring 2018

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.

Animal Communication: Read More [ + ]

### 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

Animal Communication: Read Less [ - ]

## ESPM 157 Data Science in Global Change Ecology 4 Units

Terms offered: Fall 2017

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

Data Science in Global Change Ecology: [Read More](#) [+]

### 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

Data Science in Global Change Ecology: [Read Less](#) [-]

## 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 areas, 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.

Biodiversity Conservation in Working Landscapes: [Read More](#) [+]

### 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

Biodiversity Conservation in Working Landscapes: [Read Less](#) [-]

## ESPM C159 Human Diet 4 Units

Terms offered: Spring 2016, Spring 2015, Spring 2013

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

Human Diet: [Read More](#) [+]

### Hours & Format

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

### Additional Details

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

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

**Instructor:** Milton

**Also listed as:** NUSCTX C159

Human Diet: [Read Less](#) [-]

## ESPM 160AC American Environmental and Cultural History 4 Units

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

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.

American Environmental and Cultural History: Read More [+]

### Hours & Format

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

### Additional Details

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

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

**Instructor:** Merchant

**Formerly known as:** 160AC

**Also listed as:** HISTORY 120AC

American Environmental and Cultural History: Read Less [-]

## ESPM 161 Environmental Philosophy and Ethics 4 Units

Terms offered: Fall 2017, Fall 2016, Fall 2015

A critical analysis of human environments as physical, social-economic, and technocultural ecosystems with emphasis on the role of ideologies, beliefs, attitudes, and behavior. An examination of contemporary environmental literature and the philosophies embodied therein.

Environmental Philosophy and Ethics: Read More [+]

### Hours & Format

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

### Additional Details

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

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

**Instructor:** Merchant

Environmental Philosophy and Ethics: Read Less [-]

## ESPM 162 Bioethics and Society 4 Units

Terms offered: Fall 2017, Fall 2016, Fall 2015

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.

Bioethics and Society: Read More [+]

### Hours & Format

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

### Additional Details

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

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

**Instructor:** Winickoff

Bioethics and Society: Read Less [-]

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

Terms offered: Spring 2018, Spring 2017, Spring 2015

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.

Environmental Justice: Race, Class, Equity, and the Environment: Read More [+]

### Hours & Format

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

### Additional Details

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

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

**Instructor:** O'Rourke

**Formerly known as:** Sociology 128AC

**Also listed as:** SOCIOL 137AC

Environmental Justice: Race, Class, Equity, and the Environment: Read Less [-]

## ESPM 164 GIS and Environmental Science 3 Units

Terms offered: Fall 2017, Fall 2016, Fall 2015

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.

GIS and Environmental Science: Read More [\[+\]](#)

### Rules & Requirements

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

### Hours & Format

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

### Additional Details

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

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

**Instructor:** Kelly

GIS and Environmental Science: Read Less [\[-\]](#)

## ESPM 165 International Rural Development Policy 4 Units

Terms offered: Spring 2018, Spring 2017, Fall 2016

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.

International Rural Development Policy: Read More [\[+\]](#)

### 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

International Rural Development Policy: Read Less [\[-\]](#)

## ESPM 166 Natural Resource Policy and Indigenous Peoples 4 Units

Terms offered: Spring 2014, Spring 2013, Spring 2012

Critical analysis of the historical transformation of indigenous peoples and their environments in North America and the Third World. The origins and specific patterns of socio-economic problems in these areas, existing and alternative future development policies and their effects.

Natural Resource Policy and Indigenous Peoples: Read More [\[+\]](#)

### Rules & Requirements

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

### Hours & Format

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

### Additional Details

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

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

Natural Resource Policy and Indigenous Peoples: Read Less [\[-\]](#)

## ESPM C167 Environmental Health and Development 4 Units

Terms offered: Spring 2018, Spring 2017, Spring 2016

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.

Environmental Health and Development: Read More [\[+\]](#)

### 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

Environmental Health and Development: Read Less [\[-\]](#)

## ESPM 168 Political Ecology 4 Units

Terms offered: Spring 2018, Spring 2017, Fall 2015

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.

Political Ecology: Read More [+]

### 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

Political Ecology: Read Less [-]

## ESPM 169 International Environmental Politics 4 Units

Terms offered: Fall 2017, Summer 2017 First 6 Week Session, Summer 2017 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.

International Environmental Politics: Read More [+]

### 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

International Environmental Politics: Read Less [-]

## ESPM C170 Carbon Cycle Dynamics 3 Units

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

The focus is the (unsolved) puzzle of the contemporary carbon cycle.

Why is the concentration of atmospheric CO<sub>2</sub> 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.

Carbon Cycle Dynamics: Read More [+]

### 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

Carbon Cycle Dynamics: Read Less [-]

## ESPM 172 Photogrammetry and Remote Sensing 3 Units

Terms offered: Fall 2013, Spring 2010, Fall 2009

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

### Rules & Requirements

**Prerequisites:** Geometry, algebra, and trigonometry

### Hours & Format

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

### Additional Details

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

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

**Instructor:** Gong

Photogrammetry and Remote Sensing: Read Less [-]

## ESPM 173 Introduction to Ecological Data Analysis 3 Units

Terms offered: Fall 2016, Fall 2015, Spring 2014

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.

Introduction to Ecological Data Analysis: Read More [+]

### Hours & Format

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

### Additional Details

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

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

**Instructor:** de Valpine

Introduction to Ecological Data Analysis: Read Less [-]

## ESPM 174 Design and Analysis of Ecological Research 4 Units

Terms offered: Spring 2017, Fall 2014, Fall 2012

Surveys major designs and analyses for biological field and laboratory 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.

Design and Analysis of Ecological Research: Read More [+]

### 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

Design and Analysis of Ecological Research: Read Less [-]

## ESPM 175A Senior Research Seminar in Environmental Sciences 3 Units

Terms offered: Fall 2017, Fall 2016, Fall 2015

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 emphasize research design, data analysis, scientific writing, and scientific communication.

Senior Research Seminar in Environmental Sciences: Read More [+]

### 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

Senior Research Seminar in Environmental Sciences: Read Less [-]

## ESPM 175B Senior Research Seminar in Environmental Sciences 3 Units

Terms offered: Spring 2018, Spring 2017, Spring 2016

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 emphasize research design, data analysis, scientific writing, and scientific communication.

Senior Research Seminar in Environmental Sciences: Read More [+]

### 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

Senior Research Seminar in Environmental Sciences: Read Less [-]



## ESPM 175L Senior Research Laboratory in Environmental Sciences 1 Unit

Terms offered: Spring 2017, Spring 2016, Fall 2015

Independent laboratory or field research in support of the required senior seminar project.

Senior Research Laboratory in Environmental Sciences: Read More [+]

### Rules & Requirements

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

**Repeat rules:** Course may be repeated for credit.

### 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

Senior Research Laboratory in Environmental Sciences: Read Less [-]

## ESPM H175A Senior Research Seminar in Environmental Sciences 3 Units

Terms offered: Fall 2017, Fall 2016, Fall 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.

Senior Research Seminar in Environmental Sciences: Read More [+]

### 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](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

Senior Research Seminar in Environmental Sciences: Read Less [-]

## 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.

Senior Research Seminar in Environmental Sciences: Read More [+]

### 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](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

Senior Research Seminar in Environmental Sciences: Read Less [-]

## 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.

Senior Research Laboratory in Environmental Sciences: Read More [+]

### 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

Senior Research Laboratory in Environmental Sciences: Read Less [-]

## ESPM 177 Sustainable Water and Food Security 4 Units

Terms offered: Not yet offered

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.

Sustainable Water and Food Security: Read More [+]

### 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

Sustainable Water and Food Security: Read Less [-]

## 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.

Environmental Science Education Practicum: Read More [+]

### Rules & Requirements

**Prerequisites:** Consent of instructor

**Repeat rules:** Course may be repeated for credit.

### 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.

Environmental Science Education Practicum: Read Less [-]

## 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.

GC-Maker Lab I: Skills and Theory: Read More [+]

### 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

GC-Maker Lab I: Skills and Theory: Read Less [-]

## 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.

GC-Maker Lab II: Instrument development: Read More [\[+\]](#)

### 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

GC-Maker Lab II: Instrument development: Read Less [\[-\]](#)

## ESPM C180 Air Pollution 3 Units

Terms offered: Spring 2018, Spring 2017, Spring 2016

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.

Air Pollution: Read More [\[+\]](#)

### Rules & Requirements

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

### Hours & Format

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

### Additional Details

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

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

**Instructor:** Goldstein

**Also listed as:** CIV ENG C106/EPS C180

Air Pollution: Read Less [\[-\]](#)

## ESPM 181A Fire Ecology 3 Units

Terms offered: Spring 2018, Spring 2017, Spring 2016

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.

Fire Ecology: Read More [\[+\]](#)

### 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

Fire Ecology: Read Less [\[-\]](#)

## ESPM 182 Forest Operations Management 3 Units

Terms offered: Fall 2016, Fall 2014, Fall 2012

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

Forest Operations Management: Read More [\[+\]](#)

### Rules & Requirements

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

### Hours & Format

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

### Additional Details

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

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

**Instructor:** York

Forest Operations Management: Read Less [\[-\]](#)

## ESPM 183 Forest Ecosystem Management and Planning 4 Units

Terms offered: Spring 2018, Spring 2017, Spring 2010

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.

Forest Ecosystem Management and Planning: Read More [\[+\]](#)

### 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

Forest Ecosystem Management and Planning: Read Less [\[-\]](#)

## 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.

Forest Ecosystem Management: Read More [\[+\]](#)

### 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

Forest Ecosystem Management: Read Less [\[-\]](#)

## 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.

Agroforestry Systems: Read More [\[+\]](#)

### 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

Agroforestry Systems: Read Less [\[-\]](#)

## ESPM 185 Applied Forest Ecology 4 Units

Terms offered: Fall 2017, Fall 2016, Fall 2015

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.

Applied Forest Ecology: [Read More](#) [+]

### 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

Applied Forest Ecology: [Read Less](#) [-]

## ESPM 186 Management and Conservation of Rangeland Ecosystems 4 Units

Terms offered: Spring 2018, Spring 2017, Spring 2016

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

Management and Conservation of Rangeland Ecosystems: [Read More](#) [+]

### 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

Management and Conservation of Rangeland Ecosystems: [Read Less](#) [-]

## 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.

Restoration Ecology: [Read More](#) [+]

### 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

Restoration Ecology: [Read Less](#) [-]

## 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.

Case Histories in Wildlife Management: [Read More](#) [+]

### 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

Case Histories in Wildlife Management: [Read Less](#) [-]

## ESPM 190 Seminar in Environmental Issues 3 Units

Terms offered: Spring 2017, Fall 2010, Fall 2009

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.

Seminar in Environmental Issues: Read More [+]

### Rules & Requirements

**Prerequisites:** Upper division standing and consent of instructor

**Repeat rules:** Course may be repeated for credit.

### 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.

Seminar in Environmental Issues: Read Less [-]

## 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.

The American Forest: Its Ecology, History, and Representation: Read More [+]

### 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

The American Forest: Its Ecology, History, and Representation: Read Less [-]

## ESPM C192 Molecular Approaches to Environmental Problem Solving 2 Units

Terms offered: Spring 2018, Fall 2017, Spring 2017

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. Molecular Approaches to Environmental Problem Solving: Read More [+]

### 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

Molecular Approaches to Environmental Problem Solving: Read Less [-]

## 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.

Environmental Education: Read More [+]

### 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

Environmental Education: Read Less [-]



## ESPM 194 Senior Seminar in Conservation and Resource Studies 2 Units

Terms offered: Spring 2012, Fall 2011, Spring 2011

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.

Senior Seminar in Conservation and Resource Studies: [Read More](#) [+]

### 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.

Senior Seminar in Conservation and Resource Studies: [Read Less](#) [-]

## ESPM 194A Senior Seminar in Conservation and Resource Studies 2 Units

Terms offered: Spring 2018, Fall 2017, Spring 2017

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.

Senior Seminar in Conservation and Resource Studies: [Read More](#) [+]

### 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.

Senior Seminar in Conservation and Resource Studies: [Read Less](#) [-]

## ESPM 194B Capstone Course in Society and Environment 1 Unit

Terms offered: Spring 2018, Fall 2017, Spring 2017

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.

Capstone Course in Society and Environment: [Read More](#) [+]

### 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.

Capstone Course in Society and Environment: [Read Less](#) [-]

## ESPM 195 Senior Thesis 3 - 4 Units

Terms offered: Spring 2017, Fall 2016, Spring 2016

Subject must be approved by faculty sponsor during final semester of the junior year and course initiated in the first semester of the senior year. Credit option: Conservation Resource Studies majors who have successfully completed 195 may petition for exemption from 194.

Senior Thesis: [Read More](#) [+]

### Rules & Requirements

**Prerequisites:** Senior standing in ESPM major; 3.0 GPA

### Hours & Format

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

### Summer:

6 weeks - 1-5 hours of independent study per week

8 weeks - 1-4 hours of independent study per week

### Additional Details

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

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

Senior Thesis: [Read Less](#) [-]

## ESPM H196 Honors Research 4 Units

Terms offered: Fall 2016, Spring 2016, Fall 2015

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.

Honors Research: [Read More](#) [+]

### Rules & Requirements

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

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

### Hours & Format

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

#### Summer:

6 weeks - 30 hours of independent study per week

8 weeks - 22.5 hours of independent study per week

10 weeks - 18 hours of independent study per week

### Additional Details

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

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

Honors Research: [Read Less](#) [-]

## ESPM 197 Field Study in Environmental Science, Policy, and Management 1 - 3 Units

Terms offered: Summer 2017 8 Week Session, Spring 2017, Fall 2016

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.

Field Study in Environmental Science, Policy, and Management: [Read More](#) [+]

### Rules & Requirements

**Prerequisites:** Upper division standing. Campus and departmental restrictions apply

**Repeat rules:** Course may be repeated for credit.

### Hours & Format

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

#### Summer:

6 weeks - 1-5 hours of fieldwork per week

8 weeks - 1-5 hours of fieldwork per week

### Additional Details

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

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

Field Study in Environmental Science, Policy, and Management: [Read Less](#) [-]

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

Terms offered: Spring 2017, Fall 2016, Spring 2016

Group study of special topics in environmental science, policy, and management that are not covered in depth in regular courses in the department.

Directed Group Studies for Advanced Undergraduates: Read More [\[+\]](#)

### Rules & Requirements

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

**Repeat rules:** Course may be repeated for credit.

### 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.

Directed Group Studies for Advanced Undergraduates: Read Less [\[-\]](#)

## ESPM 198BC Berkeley Connect 1 Unit

Terms offered: Spring 2018, Fall 2017, Spring 2017

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.

Berkeley Connect: Read More [\[+\]](#)

### 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.

Berkeley Connect: Read Less [\[-\]](#)

## ESPM 199 Supervised Independent Study and Research 1 - 4 Units

Terms offered: Fall 2016, Summer 2016 10 Week Session, Spring 2016

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.

Supervised Independent Study and Research: Read More [\[+\]](#)

### Rules & Requirements

**Prerequisites:** Upper division standing; campus and departmental restrictions apply

**Repeat rules:** Course may be repeated for credit.

### 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.

Supervised Independent Study and Research: Read Less [\[-\]](#)