

# Conservation and Resource Studies

## Bachelor of Science (BS)

The Conservation and Resource Studies (CRS) major is a self-designed interdisciplinary program for students interested in environmental issues and areas of interaction among natural resources, population, energy, technology, societal institutions, and cultural values. Students draw on the course offerings of the entire campus and appropriate community resources in the development of individual programs of study.

The major's orientation is toward flexibility and an individualized educational approach to understanding the structure and dynamic functions of complex environmental systems within our society and biosphere. It encourages interaction among students, faculty, and community. The major's offerings are designed to help each student formulate an area of interest, but are not in any way meant to limit the range of options available. Sample topics include environmental justice and education, sustainable development of world populations, energy and environmental policy, conservation and culture, global environmental politics, and ecological restoration and policy.

Graduates are well-prepared for careers in fields such as environmental consulting, education, health, 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

Advice on admission for freshmen and transfer students can be found on the CNR Admissions Guide (<http://guide.berkeley.edu/archive/2019-20/undergraduate/colleges-schools/natural-resources/#admissiontext>) page or the CNR Prospective Student website (<https://nature.berkeley.edu/prospective-students>). 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. Transfer students may apply directly to the major through the UC application.

Information for current Berkeley students who would like to declare the major after admission, including information on a change of major or change of college, please see chapter 6 of the College of Natural Resources Undergraduate Student Handbook (<https://nature.berkeley.edu/handbook>). (<https://nature.berkeley.edu/handbook>)

## Honors Program

Students with a 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 registering for the honors symposium and on honors requirements, 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

The department offers a minor in Conservation and Resource Studies. For information regarding how to declare the minor, please contact the department.

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

Environmental Sciences (<http://guide.berkeley.edu/archive/2019-20/undergraduate/degree-programs/environmental-sciences>) (Major only)

Forestry and Natural Resources (<http://guide.berkeley.edu/archive/2019-20/undergraduate/degree-programs/forestry-natural-resources>) (Major and Minor)

Molecular Environmental Biology (<http://guide.berkeley.edu/archive/2019-20/undergraduate/degree-programs/molecular-environmental-biology>) (Major only)

Society and Environment (<http://guide.berkeley.edu/archive/2019-20/undergraduate/degree-programs/society-environment>) (Major only)

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

## General Guidelines

1. All courses taken to fulfill the major requirements below must be taken for 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 (except for students majoring in environmental economics and policy; please see the EEP major adviser for further information).
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/Not 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.
8. For information regarding residence requirements and unit requirements, please see the College Requirements tab.
9. A minimum of 120 units is needed to confer your degree.

## Lower Division Major Requirements

### Breadth Requirements

Students must fulfill one course (3-4 units) in Social and Behavioral Sciences (<http://ls-advise.berkeley.edu/requirement/breadth7/sbs.html>) or International Studies (<http://ls-advise.berkeley.edu/requirement/breadth7/is.html>) breadth, another course (3-4 units) in the Physical Sciences (<http://ls-advise.berkeley.edu/requirement/breadth7/ps.html>) breadth, and a third course (3-4 units) in Arts and Literature (<http://ls-advise.berkeley.edu/requirement/breadth7/al.html>), Historical Studies (<http://ls-advise.berkeley.edu/requirement/>)

breadth7/hs.html), or Philosophy & Values (<http://ls-advise.berkeley.edu/requirement/breadth7/pv.html>) breadth.

### ESPM Environmental Science Core

Select one course from the following:

ESPM 2	The Biosphere [3]
ESPM 6	Environmental Biology [3]
ESPM C10	Environmental Issues [4]
ESPM 15	Introduction to Environmental Sciences [3]
ESPM C46	Climate Change and the Future of California [4]

### ESPM Social Science Core

Select one course from the following:

ESPM 3	Course Not Available [3]
ESPM C11	Americans and the Global Forest [4]
ESPM C12	Course Not Available
ESPM 50AC	Introduction to Culture and Natural Resource Management [4]
ESPM 60	Environmental Policy, Administration, and Law [4]

### General Biology

Select one course from the following, with lab:

BIOLOGY 1A & 1AL	General Biology Lecture and General Biology Laboratory
BIOLOGY 1B	General Biology Lecture and Laboratory [4] (recommended)
BIOLOGY 11 & 11L	Course Not Available and Course Not Available

### Calculus or Statistics

Select one course from the following:

MATH 16A	Analytic Geometry and Calculus [3]
MATH 16B	Analytic Geometry and Calculus [3]
MATH 1A	Calculus [4]
MATH 1B	Calculus [4]
PB HLTH 142	Introduction to Probability and Statistics in Biology and Public Health [4]
STAT 2	Introduction to Statistics [4]
POL SCI 3	Introduction to Empirical Analysis and Quantitative Methods [4]
STAT C8	Foundations of Data Science [4]
STAT 20	Introduction to Probability and Statistics [4]
STAT 131A	Statistical Methods for Data Science [4]

Students design Area of Interest statement and declare the major in this class. This course should be taken spring of sophomore year or fall of junior year.

### Courses Preparatory to the Area of Interest

Select two courses, in consultation with adviser after admission to the major. Prerequisites for area of interest classes may be applied toward this requirement.

## Core Lower and Upper Division Major Requirements

ESPM 90	Introduction to Conservation and Resource Studies Major (recommended spring semester of sophomore year)	2
ESPM 100	Environmental Problem Solving	4

ESPM 194A	Senior Seminar in Conservation and Resource Studies <sup>1</sup>	2
-----------	--	---

Select eight area of interest classes, minimum 24 units (see below for specific requirements)

<sup>1</sup> Recommended in the final semester at UC Berkeley. This requirement may be replaced by ESPM 195 or ESPM H196; see major adviser for details.

## Area of Interest (AOI)

Sample topics include, but are not limited to, marine resource management; sustainable agriculture in the developing world; environmental justice and education; wildlife conservation and management; energy and environmental policy; population and conservation policy; urban environmental law; public health and environmental pollution; sustainable landscape design; community organization for resource conservation; bioethics and technology; tropic conservation and medical epidemiology; urban environmental education; and environmental business.

## Requirements:

1. A minimum of eight faculty-approved upper division courses are required (at least 24 semester units total).
2. No AOI course may be taken prior to reaching junior status (60 semester units).
3. At least six of the eight courses must be taken on the UC Berkeley campus (Forestry Camp courses = UCB courses).
4. A maximum of two courses may be taken through the Education Abroad Program.
5. A maximum of two AOI courses (6-8 units) may be structured field studies (e.g. Moorea or Summer Forestry Camp).
6. Each course must be upper division and taken for a letter grade. Each must be 2 units or above.
7. ESPM 197, ESPM 198 and ESPM 199 courses will not be accepted as one of the eight AOI courses.

Students who have a strong interest in an area of study outside their major often decide to complete a minor program. These programs have set requirements and are noted officially on the transcript in the memoranda section, but are not noted on diplomas.

## General Guidelines

1. All minors must be declared no later than one semester before a student's Expected Graduation Term (EGT). If the semester before EGT is fall or spring, the deadline is the last day of RRR week. If the semester before EGT is summer, the deadline is the final Friday of Summer Sessions. To declare a minor, contact the department advisor for information on requirements, and the declaration process.
2. All courses taken to fulfill the minor requirements below must be taken for graded credit.
3. A minimum grade point average (GPA) of 2.0 is required for courses used to fulfill the minor requirements.
4. No more than one upper division course may be used to simultaneously fulfill requirements for a student's major and minor programs.

There are two options for completing the CRS minor: Option 1, which requires students to follow a predetermined curriculum; or Option 2, which allows students to design their own minor around a topic of interest.

## Requirements: Option 1

Minor core course, select one of the following:

ESPM C10	Environmental Issues [4]
ESPM 15	Introduction to Environmental Sciences [3]
ESPM C12	Course Not Available [4]
ESPM 50AC	Introduction to Culture and Natural Resource Management [4]

Select four additional courses from the following; three courses must be upper division:

ESPM 2	The Biosphere [3]
ESPM 6	Environmental Biology [3]
ESPM 60	Environmental Policy, Administration, and Law [4]
ESPM C103	Principles of Conservation Biology [4]
ESPM 117	Urban Garden Ecosystems [4]
ESPM 118	Agricultural Ecology [4]
ESPM 160AC	American Environmental and Cultural History [4]
ESPM 161	Environmental Philosophy and Ethics [4]
ESPM 162	Bioethics and Society [4]
ESPM 163AC	Environmental Justice: Race, Class, Equity, and the Environment [4]
ESPM 165	International Rural Development Policy [4]
ESPM 166	Course Not Available
ESPM C167	Environmental Health and Development [4]
ESPM 168	Political Ecology [4]
ESPM 169	International Environmental Politics [4]
ESPM 186	Management and Conservation of Rangeland Ecosystems [4]
ESPM C193A	Environmental Education [3]
or ESPM C193B	Course Not Available
ESPM 190	Seminar in Environmental Issues [3]

## Requirements: Option 2, Individualized Minor

Before beginning Option 2, contact Dr. Céline Pallud (cpallud@berkeley.edu) for review and approval of your minor program. Bring a copy of your minor program with her signature to 260 Mulford Hall.

In addition to the requirements listed below, students must: create a title for their minor (e.g., Sustainable Rural Development, Wildlife Management, etc.) and write a paragraph explaining how the five selected courses achieve an understanding of their academic topic.

Minor core course, select one of the following:

ESPM C10	Environmental Issues [4]
ESPM C12	Course Not Available [4]
ESPM 50AC	Introduction to Culture and Natural Resource Management [4]
ESPM 15	Introduction to Environmental Sciences [3]

Select four upper division, interdisciplinary courses: <sup>1</sup>

Two courses must be natural science courses

Two courses must be social science courses

<sup>1</sup> At least two of the upper division courses must be taken in the ESPM department.

Reading and Composition (<http://guide.berkeley.edu/archive/2019-20/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/archive/2019-20/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/archive/2019-20/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 and many students complete their breadth courses in their first two years. Breadth courses are built into CNR major requirements and each major requires a different number of breadth courses and categories. The EEP major is the only CNR major that requires the entire 7 course breadth. Refer to the major snapshots on each CNR major page (<https://nature.berkeley.edu/advising/majors-minors>) for additional information.

## 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 (<https://nature.berkeley.edu/advising/courses-grades/#AP%20Exam%20Equivalency%20Chat>) in the CNR Student Handbook (<https://nature.berkeley.edu/handbook>) for more information.

## Unit 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 12 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 the term in which you achieve and exceed 90 units (senior status), you must complete at least 24 of the remaining 30 units in residence at the College of Natural Resources over at least 2 semesters. To count as residence, a semester must consist of at least 6 passed units taken while the student is a member of CNR. At least one of the two terms must be a fall or spring semester. Senior residence terms do not need to be completed consecutively. All courses offered on campus for the fall, spring, and summer terms by Berkeley departments and programs and all Berkeley online ("W") courses count. 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 a fall, spring or summer UC Education Abroad Program (UCEAP), Berkeley Summer Abroad, 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. International travel study programs sponsored by Summer Sessions and education abroad programs offered outside of the UC system do not qualify for modified senior residence.

Most students automatically satisfy 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.
- A grade of at least C- is required in all courses for the major

## Mission

Conservation and Resource Studies (CRS) is an interdisciplinary major designed for students interested in environmental issues and interactions among disciplines related to natural resources, population, energy, technology, societal in situations, and cultural values. Because CRS students draw on the course offerings of the entire campus, they have the flexibility to incorporate any combination of courses in the social sciences, biological sciences, physical sciences, or humanities to address complex environmental problems. Students may also draw upon appropriate community resources in the development of individual programs of study. Despite the flexibility and breadth, all CRS curricula share a demonstrable commitment to gaining a truly interdisciplinary education.

## Learning Goals for the Major

1. Understand environmental issues and interactions among disciplines related to natural resources, population, energy, technology, societal institutions, and cultural values:
  - Understand the ways in which natural resources are central to the continued welfare of human society and the non-human world.
  - Critically analyze the ways in which human population growth affects natural resources and human well-being and survival.
  - Recognize the ways in which energy growth and energy systems affect the long-term welfare of both the earth and its human inhabitants.
  - Evaluate the ways in which industrial, biological, and appropriate technologies and technological scales impact human society and life on Earth.
  - Understand the interactions among social, political, and cultural institutions and values and how they affect the conservation of natural resources.
2. Comprehend the different ways in which the social sciences, biological sciences, physical sciences, and humanities address complex environmental problems:
  - Recognize the frameworks and methods used by the social sciences in approaching and resolving environmental problems.
  - Grasp the methods and analytical concepts used in the biological and physical sciences in solving environmental problems.
  - Be able to explain the role and importance of the humanities in resolving environmental problems.
  - Identify the aim of one's own education as truly interdisciplinary and select the courses that will allow its achievement.
3. Have the ability to draw upon appropriate community resources in the development of approaches to environmental problem-solving:
  - Know how to identify and find local organizations that are working to improve the environment.
  - Develop the skills that will assess the value of community efforts and methods regarding conservation and environmental issues.

- Use access to community groups to introduce ideas that may be applicable to the particular problems with which they are engaged.
  - Advance an argument for a policy or regulatory action on any issue in the environmental field with a technical or scientific component.
4. Be able to address diversity in both human society and the environment:
- Explain the historical and cultural origins of diversity within human societies.
  - Understand how power, prejudice, and poverty can create disparities within society and how these disparities might be overcome.
  - Assess the importance of biotic diversity for conservation and human welfare.
  - Understand how biological diversity and cultural diversity can interact in ways that can conserve life on the planet.
  - Learn to live with biodiversity and cultural diversity in all aspects of life.

## Skills

1. Apply basic skills in research, knowledge of literature, analysis, and communication:
- Write clearly, demonstrating the ability to focus and elaborate on chosen topics.
  - Read critically and assess arguments in professional, public, and advocacy literature.
  - Have strong communication skills (written and oral) through presentations, facilitation of discussion, and written assignments.
  - Produce written analyses and reports based on literature, scientific and field studies, and community resources.
  - Have strong library and internet research skills in order to conduct research on environmental topics potentially relevant to work in future careers.
  - Have advocacy writing skills in order to communicate scientific ideas and environmental perspectives to a broader public through a media outlet.
  - Be able to work cooperatively in team settings to connect with others and prepare for global citizenship.
2. Lifetime skills:
- Show concern for the natural environment and its biotic and abiotic components.
  - Be able to engage in the conservation of natural resources as a responsible citizen of the community and the world.
  - Know how to obtain the information that will lead to informed choices and decisions about the impact and importance of natural resources in maintaining a viable planet for future generations.