

Natural Resources

College of Natural Resources (<http://cnr.berkeley.edu/site>)

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College Website: College of Natural Resources
<http://cnr.berkeley.edu/site>)

Overview

The College of Natural Resources (CNR) educational programs help our majors become our professional colleagues in fields that range from biotechnology to medicine and public health, environmental economics and ecosystem management. All College of Natural Resources majors are built on a strong foundation in a biological, physical or social science field, and students can earn a BS in one of ten different fields. CNR courses and programs are designed to diffuse, or *extend*, scientific and environmental literacy as broadly as possible on the campus and in the community. The College offers undergraduates a small college environment and close working relationships with faculty mentors and advisers. Those relationships include opportunities for hands on research experience, in the field opportunities, and community service. CNR programs also offer many interdisciplinary approaches to problem solving. College faculty and students work together to understand and evaluate the complex interactions between human and natural systems that will meet fundamental human needs for healthy food, potable water, and sustainable agricultural and energy systems. Our biological science programs span a breadth of topics from the microbes through molecular biology to human and environmental health and safety. The college provides extensive opportunities for service learning, civic engagement, field experiences, and through our alumni-supported Sponsored Projects for Undergraduate Research (SPUR) program, financial support for hands on research experience.

The college has four departments: (1) Agriculture and Resource Economics (ARE) provides a basic foundation in economics and policy analysis, as applied to the conservation and management of natural and environmental resources; (2) Environmental Science, Policy, and Management (ESPM) brings diverse expertise to bear on environmental issues from molecular to global scales; (3) Nutritional Science and Toxicology (NST) focuses on research in nutrient function, metabolism, and molecular toxicology; and (4) Plant and Microbial Biology (PMB) centers on plant biology from the molecular to organismal levels, with a direct connection to plant biotechnology. Each department offers graduate

and undergraduate programs, and the faculty participates in numerous interdisciplinary graduate groups.

Freshman Applicants

Undergraduate admission is directed by the Office of Undergraduate Admissions and is based on campuswide admission criteria. The College of Natural Resources itself does not review the files for freshman admission. Please visit the College of Natural Resources website (<http://cnr.berkeley.edu/site>) to review the majors in the College of Natural Resources to see if one of our programs is right for you. Students are encouraged to apply directly to a major, but the College of Natural Resources' undeclared option may also be selected. Send email to cnrteaching@berkeley.edu if you need further advice or assistance.

Transferring into the College from other Berkeley Colleges and Schools

Current UC Berkeley students in good academic standing are welcome to apply for transfer into a major in the College of Natural Resources at any time during the year. Please visit the college's website (<http://cnr.berkeley.edu/site>) to review the majors in the College of Natural Resources to see if one of our programs is right for you, or send email to cnrteaching@berkeley.edu for more information or referral to the major adviser.

If you decide to transfer into the college, complete a "Petition to Change College or Major" form and, if the undergraduate major adviser requests it, any other relevant information. Forms are available at the Office of Instruction and Student Affairs, 260 Mulford Hall, from the offices of any school or college, and from the Registrar at 120 Sproul Hall. You may also download forms from the CNR website (<http://cnr.berkeley.edu/site>). If you are accepted, you will receive email notification from the College of Natural Resources and will be eligible for transfer immediately.

Transferring into the College of Natural Resources from Off-Campus Schools and Programs

The College of Natural Resources welcomes transfer applicants to each of its undergraduate majors. Priority for admission is given to students with excellent preparation for a major, as transfer students are not admitted into undeclared status.

Prospective transfer applicants should carefully review the requirements for CNR majors online on the College of Natural Resources website (<http://cnr.berkeley.edu/site>), and at [assist.org](http://www.assist.org/web-assist/welcome.html) (<http://www.assist.org/web-assist/welcome.html>). Juniors wishing to transfer into CNR should also contact the adviser for the major in which they are interested to help determine whether they have met the appropriate prerequisite course requirements and to discuss their options. In some majors, IGETC (<http://admission.universityofcalifornia.edu/transfer/requirements/additional-requirements/igetc>) can be used to meet breadth requirements. Send email to cnrteaching@berkeley.edu for referral to a major adviser or for general advice or assistance.

Transfer applicants will be evaluated on the basis of the strength of their academic preparation, including the number of fulfilled requirements for the major to which they have applied, the GPA in the required courses, and their cumulative GPA. Transfer students apply through the campus Office of Undergraduate Admissions. Please see the Office of Undergraduate Admissions website (<http://admissions.berkeley.edu/transferstudents>) for information about how to apply.

Undergraduate Majors

Since its origin as one of the cornerstones of the University of California, the College of Natural Resources has developed multidisciplinary programs that encompass the physical, biological, and social sciences, with a strong commitment to undergraduate teaching. The college is small enough to provide individual focus and attention through faculty advising, small class size, and dedicated faculty. Undergraduate programs include professional programs designed for students with interests in careers like forestry and dietetics. Some majors provide a foundation in sciences that prepares students for graduate and professional work in biology, medicine and other health sciences, economics, or numerous environmental fields. Most are integrative programs that emphasize flexible, innovative approaches. For more information about the majors, contact the Office of Instruction and Student Affairs at 260 Mulford Hall; see the College of Natural Resources website (<http://cnr.berkeley.edu/site>) ; call (510) 642-0542; or email cnrteaching@berkeley.edu .

Offered by the Department of Agricultural and Resource Economics (<http://bulletin.berkeley.edu/archive/2013-14/departmentsandsubjects/agriculturalandresourceeconomics>)

- **Environmental Economics and Policy (EEP)** is a fundamental education in economics and statistics, with a focus in mathematics. Students develop a sense of how the choices people make affect the environment, of the conflict between economic development and environmental quality, and how such conflicts can be resolved. This major is also offered through the College of Letters and Science (<http://ls.berkeley.edu>) .

Offered by the Department of Environmental Science, Policy, and Management (ESPM) (<http://bulletin.berkeley.edu/archive/2013-14/departmentsandsubjects/environmentalsciencepolicyandmanagement>)

- **Conservation and Resource Studies (CRS)** is ideal for highly motivated students seeking an individualized program. Students work with faculty to develop unique areas of study focused on environmental problems requiring cross-disciplinary approaches.
- **Environmental Sciences (ES)** provides a broad, comprehensive education in the fundamentals of biology, chemistry, physics, mathematics, and social science. The breadth of this major allows study of the interactions between human activities and biological and physical environments on all scales, from local to global. The major culminates with a senior research project.
- **Forestry and Natural Resources (FNR)** is the result of a merger of the former majors in forestry and in resource management. Specializations in natural science and human dimensions are offered in the study of the ecology and management of forest, woodland, and grassland ecosystems. Emphases in wildlife biology, water policy, fire science, ecosystem restoration, environmental justice, remote sensing and geographical information systems, and rural sociology are available. This major prepares students for graduate school and careers in environmental consulting, public agencies, nonprofit conservation organizations, and private companies, and for professional careers in forestry, wildlife, and range management. Participation in an eight-week summer field program in the northern Sierra Nevada is required.
- **Molecular Environmental Biology (MEB)** introduces students to the organization and function of biological organisms at the molecular, cellular, organismal, and ecological levels, and provides an understanding of the means in which organisms function in their environment. This major is a good choice for pre-med and pre-vet

students, for students interested in graduate education in a biological area, as well as students interested in general biology.

- **Society and Environment (S & E)** 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: U.S. Environmental Policy and Management, Global Environmental Politics, or Environmental Justice and Development.

Offered by the Department of Nutritional Sciences and Toxicology (NST) (<http://bulletin.berkeley.edu/archive/2013-14/departmentsandsubjects/nutritionalscienceandtoxicology>)

- **Nutritional Sciences and Toxicology (NST)** has three areas of specialization: Physiology and Metabolism (Metabolic Biology), Didactic Training Program in Dietetics and Molecular Toxicology. Physiology and Metabolism combines a foundation in natural sciences with advanced coursework in nutrition, the study of nutrient utilization, and food science. Dietetics students at the junior and senior levels take coursework emphasizing nutrition and the application of this knowledge through dietetic practice. Molecular Toxicology focuses on hazardous and beneficial effects on natural and man-made toxic agents. From industrially produced environmental contaminants and designer drugs to naturally occurring herbs and food products, this field of study applies molecular and computational methods so that students better understand how these agents interact with living organisms and what should be done to ensure human health and safety.

Offered by the Department of Plant and Microbial Biology (PMB) (<http://bulletin.berkeley.edu/archive/2013-14/departmentsandsubjects/plantandmicrobialbiology>)

- **Genetics and Plant Biology (GPB)** combines traditional plant sciences—physiology, biology, and anatomy—with newer biological disciplines such as genetics, molecular biology, and biochemistry for understanding the role plants play in the global environment. The major includes the spectrum of cellular and organismal aspects of plants, as well as cellular development, molecular genetics, and agricultural biotechnology.
- **Microbial Biology (MB)** is for students interested in research positions in government, industry, and academia. It is excellent for pre-med and pre-vet students, for students interested in biology in general, for students interested in pursuing postgraduate education in biology, and for students interested in teaching biology at the secondary-school level.

Major Requirements

Detailed course requirements for each major, along with college requirements for the BS degree, are available from the Office of Instruction and Student Affairs, University of California, Berkeley; 260 Mulford Hall #3100, Berkeley, CA 94720-3100. For further information, call the Office of Instruction and Student Affairs at (510) 642-0542, see the CNR website (<http://cnr.berkeley.edu/site>) , or email cnrteaching@berkeley.edu .

Minor Programs

The college offers seven minors in Conservation and Resource Studies, Energy and Resources, Environmental Economics and Policy, Forestry, Geographic Information Systems and Technology, Nutritional Sciences,

and Toxicology. For information, please see the CNR website (<http://cnr.berkeley.edu/site>) .

Undergraduate Advisers

Undergraduate advisers in each major serve as a crucial link between students and the college. Advisers are available throughout the year to assist students in planning a program best suited to their needs and interests. All students must see their adviser at least once each semester for advice in planning their academic programs.

TeleBears Registration

Students must have adviser approval before filing their TeleBears registration lists. The minimum course load is 13 units, and the maximum is 19.5. Students that need to take units outside of the approved course load must meet with the adviser.

Graduate Programs

Academic and professional graduate degree programs available in the College of Natural Resources are listed below. Inquiries regarding details of the various graduate programs may be directed to the appropriate graduate adviser.

Ad Hoc Interdisciplinary Doctoral Program

Administered by the dean of the Graduate Division

Agricultural and Resource Economics

207 Giannini Hall, (510) 642-7238

Head Adviser: Jeremy Magruder, PhD

Environmental Science, Policy, and Management

137 Mulford Hall, (510) 643-2626

Interim Head Adviser: Nicholas Mills, PhD

Forestry (MF)

133 Mulford Hall, (510) 642-6410

Head Adviser: Scott Stephens, PhD

Master of Development Practice

311 Wellman Hall, (510) 642-1585

Executive Director: David Zilberman, PhD

Microbiology

111C Koshland Hall, (510) 642-5167

Head Adviser: Pat Zambryski, PhD

Metabolic Biology

124 Morgan Hall, (510) 643-2863

Head Adviser: Joseph Napoli, PhD

Molecular Toxicology

124 Morgan Hall, (510) 643-2863

Head Adviser: Martyn Smith, PhD

Plant Biology

111E Koshland Hall, (510) 642-5167

Head Adviser: Pat Zambryski, PhD

Range Management (MS)

133 Mulford Hall, (510) 642-6410

Head Adviser: James Bartolome, PhD

NAT RES 24 Freshman Seminars 1 Unit

Department: Natural Resources

Course level: Undergraduate

Terms course may be offered: Fall and spring

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

Hours and format: 1 hour of Seminar per week for 15 weeks.

The Berkeley 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. Berkeley Seminars are offered in all campus departments, and topics vary from department to department and semester to semester.

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

NAT RES 39E Freshman/Sophomore Seminar 2 - 4 Units

Department: Natural Resources

Course level: Undergraduate

Terms course may be offered: Fall and spring

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

Hours and format: Seminar format.

Prerequisites: Priority given to freshmen and sophomores.

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.

Course may be repeated for credit when topic changes.

NAT RES 84 Sophomore Seminar 1 or 2 Units

Department: Natural Resources

Course level: Undergraduate

Terms course may be offered: Fall, spring and summer

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

Hours and format: 1 hour of seminar per week per unit for 15 weeks.

1.5 hours of seminar per week per unit for 10 weeks. 2 hours of seminar per week per unit for 8 weeks. 3 hours of seminar per week per unit for 5 weeks.

Prerequisites: Consent of instructor.

Sophomore seminars are small interactive courses offered by faculty members in departments all across the campus. Sophomore seminars offer opportunity for close, regular intellectual contact between faculty members and students in the crucial second year. The topics vary from department to department and semester to semester. Enrollment limited to 15 sophomores.

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