

PLANT SCIENCES 2009-10



UNIVERSITY OF CALIFORNIA, SANTA CRUZ

THE PLANT SCIENCES MAJOR

The plant sciences major is designed for students with an interest in plant biology and its associated curricular fields such as plant ecology, plant physiology, plant pathology, plant molecular biology, and soil science. The plant sciences curriculum draws from faculty expertise in the departments of Ecology and Evolutionary Biology, Environmental Studies, and Molecular, Cell, and Developmental Biology. The close integration of course work in Biology and Environmental Studies, combined with off-campus internships with diverse agencies, creates the opportunity for outstanding training in applied plant science fields such as agroecology, restoration ecology, and natural resource management.

STUDY AND RESEARCH OPPORTUNITIES

- ◆ Undergraduate degree available: Bachelor of Science (B.S.)
- ◆ Faculty-directed and/or independent research opportunities both in courses and through off-campus internships
- ◆ A suite of field courses providing unique opportunities to learn and conduct research in a host of ecological systems
- ◆ Intensive Education Abroad programs including Costa Rica (tropical biology) and Australia (marine biology)

HIGH SCHOOL PREPARATION

In addition to the courses required for UC admission, high school students who intend to major in plant sciences should take high school courses in biology, chemistry, advanced mathematics (precalculus), and physics.

TRANSFER PREPARATION

The faculty encourage applications from transfer students in the biological sciences. Students and their college advisers are strongly recommended to examine the degree requirements for the student's intended major: undergrad.pbsci.ucsc.edu/programs/eeb. Students should satisfy as many introductory requirements as possible prior to transfer. Courses offered at the student's institution should be compared to the UC Santa Cruz transfer agreements (found at www.assist.org) and/or course descriptions to ensure that they will qualify for transfer. It is very important for transfer students to complete science prerequisite courses before transfer, especially calculus, general chemistry with labs, and an introductory biology sequence. Students should also take physics, if possible. Prospective transfer students should visit the Physical and Biological Sciences Undergraduate Affairs web site at undergrad.pbsci.ucsc.edu/programs/eeb for further information (see the *For More Information* section).

Introductory requirements for the plant sciences major are:

- Biology 20A, *Cell and Molecular Biology*; Biology 20B, *Development and Physiology*; Biology 20C, *Ecology and Evolution*
- Chemistry 1A, 1B/M, and 1C/N, *General Chemistry with Laboratory* (three quarters)
- Applied Mathematics and Statistics 7/L, *Biostatistics with Laboratory*
- Mathematics 11A-B, *Calculus with Applications* (two quarters)
- Physics 6A/L and 6B/M, *Introductory Physics with Laboratory* (two quarters)

CAREERS

Students with bachelor's degrees in plant sciences find employment opportunities in a variety of fields. In conjunction with a graduate degree in teaching, students often use their biology background to teach science at the K–12 level, and there are increasing opportunities for a career in science writing.

Positions for both research biologists and technicians with local, state, and federal governmental agencies are also commonly pursued. Examples of employment opportunities for plant biologists with California's state agencies include: the Environmental Protection Agency; Departments of Conservation, Fish and Game; and the California Coastal Commission (these and other applicable state agencies are listed at resources.ca.gov). Examples of federal agencies include: U.S. Forest Service, U.S. Department of Agriculture's Agricultural Research Service, U.S. Fish and Wildlife Service; United States Geological Service's Biological Resources Division; Environmental Protection Agency, National Park Service, Department of Defense (Environmental Division), and others. Museums, arboreta, botanic gardens, herbaria, and germ plasm centers are increasingly hiring biologists to study and conserve biodiversity. The number of local, regional, national, and international non-governmental organizations (NGOs), especially those oriented toward restoration and conservation of biodiversity, continues to grow rapidly. These organizations (for example, California Native Plant Society and The Nature Conservancy) hire students as interns and permanent technical staff.

Elsewhere in the private sector, students find employment with native plant nurseries, landscape design, environmental consulting, soil testing, or phytopathology services, and biotechnology firms. Academic research institutions also hire students for technical research positions. All of the above provide students opportunities to explore career trajectories as they consider continuing their education in graduate programs. A degree in the plant sciences also serves as an excellent stepping-stone to further training in professional schools, including landscape architecture, public health, and environmental health. The strong reputation of the Biology and Environmental Studies programs at UC Santa Cruz underpins the strong record of successful placement of its graduates in employment and graduate programs.

EDUCATION ABROAD OPPORTUNITIES

The UC Education Abroad Program (EAP) offers qualified students unique opportunities to broaden their educational horizons. Ecology and Evolutionary Biology encourages interested students to participate. Many programs are in English-speaking countries or use English for advanced courses. Many programs offer small classes, and extensive laboratory and/or field research experience.

There are excellent programs for biological science students in Costa Rica, Australia, and New Zealand, among others. The Costa Rica Tropical Biology Program is of note to students interested in tropical biology and ecology. Held spring and fall quarters at the Monteverde Research Station, this program gives students experience with hands-on field research, offers a homestay program, and carries credit for two upper-division biology courses. The University of Queensland (Australia) offers an intensive,

full-semester Marine Science Program, which includes a stay at a research station on the Great Barrier Reef, near sheltered mangrove and seagrass habitats.

Students interested in study abroad need to get an early start on their basic science requirements, including general and organic chemistry, math, and introductory biology. Visit the EAP office as soon as possible to begin planning, and seek advice about your academic plan from the Physical and Biological Sciences Undergraduate Affairs adviser and/or faculty adviser.

ALUM FOCUS

Aislinn Bird (B.S., plant sciences '03) is a medical student at UC Irvine, and Matthew Calzetta (B.S., plant sciences '07) is a medical student at University of Southern California.

INSTRUCTIONAL GREENHOUSES

A collection of over 1,000 species of plants is housed at the rooftop UCSC Instructional Greenhouses. The collection provides hands-on learning in many areas of plant sciences with particular emphasis on ethnobotany, systematic botany, plant evolution, and ecology. Five greenhouses, outdoor growing areas, laboratory space, and study areas with wi-fi are available for student use. For more information, please see greenhouse.ucsc.edu.

ACADEMIC ADVISING

Academic advising is available from Physical and Biological Sciences Undergraduate Affairs. Undergraduate Affairs publishes the web site, undergrad.pbsci.ucsc.edu, which contains detailed information about the degree programs, sample schedules, transferring credit, placement exams, faculty research, and opportunities in the Physical and Biological Sciences majors.

FOR MORE INFORMATION

For further information about the plant sciences major and upper-division course requirements, see:

reg.ucsc.edu/catalog/html/programs_courses/biolPS.html#EEB

Information about the plant sciences major can be found at: undergrad.pbsci.ucsc.edu/programs/eeb or by e-mailing biologyadvising@ucsc.edu.

For specific information regarding Ecology and Evolutionary Biology faculty and research, please visit the department web site at: www.eeb.ucsc.edu.

If you have other questions, contact:

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