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# Environmental Sciences

In the College of Sciences

**OFFICE: Geology/Mathematics/Computer Science 604**  
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The environmental sciences major is overseen by the College of Sciences and administered by the Environmental Sciences Program Committee. The major includes courses offered mostly in departments of the College of Sciences, with some courses in departments in other colleges of the university.

## Faculty

*Environmental Sciences Program Director and Undergraduate Adviser:* Sweedler (Physics)

*Environmental Sciences Program Committee:* Chatfield (Chemistry and Biochemistry), Deutschman (Biology), Ganster (Regional Studies of the Californias), Matt (Psychology), Shapiro (Field Station Programs), Sweedler (Physics), Thorbjarnarson (Geological Sciences), Van Schoik (Southwest Center for Environmental Research and Policy)

## Offered by the College of Sciences

Major in environmental sciences with the B.S. degree in applied arts and sciences.

Emphasis in watershed science.

## The Major

Environmental sciences is an interdisciplinary program leading to a Bachelor of Science degree in applied arts and sciences. The program will provide the student with a rigorous and broad foundation in those sciences most relevant to environmental issues. While the focus is on the physical environmental sciences, some coursework is required in biology, computer science, geography, and statistics. Those students wishing to concentrate more on the biological aspects of the environment, should consider the ecology emphasis offered by the Department of Biology.

Upon completion of the degree, students will be prepared to understand and contribute to a broad range of environmental problems confronting society. This major should be especially attractive to students who wish a broader background in the environmental sciences than is easily offered by individual departments. The major will prepare the student for employment in diverse situations in the dynamic and ever-changing environmental science job market. It will also be an excellent undergraduate major for students planning to go on to graduate school in any of the environmental sciences.

## Advising

Students are required to meet with the undergraduate adviser in order to declare the major. Students wishing to major in environmental sciences are urged to meet with the adviser during their first semester.

## Environmental Sciences Major

**With the B.S. Degree in Applied Arts and Sciences**  
**(Major Code: 49011)**

All candidates for a degree in applied arts and sciences must complete the graduation requirements listed in the section of this catalog on "Graduation Requirements." Individual master plans are filed with both the environmental sciences adviser and the Office of Advising and Evaluations.

A minor is not required with this major.

**Preparation for the Major.** Environmental Sciences 100; Biology 201A, 201B; Biology 215 or Statistics 250; Chemistry 200, 201, 231; Computer Science 205; Geological Sciences 100, 101; Geography 103; and Mathematics 150, 151, Physics 195, 195L, 196, 196L, or Mathematics 121, 122, Physics 180A, 180B, 182A, 182B. (52-54 units)

**Graduation Writing Assessment Requirement.** Completing one of the approved upper division writing courses (W) with a grade of C (2.0) or better or passing the Writing Proficiency Assessment with a score of 10 or above. See page 73 in "Graduation Requirements" section for a complete listing of requirements.

**Major.** A minimum of 36 upper division units to include Environmental Sciences 498A-498B; Biology 354; Geography 508 or 511; Geography 484 or 488 or Geological Sciences 505; Geological Sciences 305 or Environmental Engineering 355; Geological Sciences 545 or Oceanography 541; 15 units selected from Biology 350, 517, 540, Chemistry 571, Computer Science 558, Economics 452 or 453, Geography 570, 572, 574, Geological Sciences 530 or 551, Mathematics 336.

## Emphasis in Watershed Science

Environmental sciences has a strong geographic component. Understanding how vegetation, soils, climate, water, and human activities interact within a spatial context is the basis for watershed analysis. Students in this emphasis will a) acquire a fundamental background in the scientific fields that contribute to watershed analysis (geology and geomorphology, hydrology, ecology, and climatology) and b) develop skills and techniques that are important in applying and integrating this knowledge within a spatial context to address watershed science and management challenges at local to regional scales.

**Preparation for the Major.** Environmental Sciences 100; Biology 201A, 201B; Biology 215 or Statistics 250; Chemistry 200; Geography 103; Geological Sciences 100, 101; and Mathematics 121, 122, Physics 180A, 180B, 182A, 182B; or Mathematics 150, 151, Physics 195, 195L, 196, 196L. (40-42 units)

**Graduation Writing Assessment Requirement.** Completing one of the approved upper division writing courses (W) with a grade of C (2.0) or better or passing the Writing Proficiency Assessment with a score of 10 or above. See page 73 in "Graduation Requirements" section for a complete listing of requirements.

**Major.** A minimum of 40-41 upper division units to include Biology 354; Geography 380, 385\*, 401\*, 483\*, 484 or 488\*, 495, 511\*; Geological Sciences 305; 15 units selected from the following courses, at least 12 units must be from 500-level courses selected from Biology 531, 535, 540, Geography 370\*, 504\*, 505, 570, 584 or 588, Philosophy 332, Physics 301, Public Administration 320.

\* Environmental Science 100 and Geography 103 may be substituted for Geography 101 prerequisite.

**Courses (ENV S)**

*Refer to Courses and Curricula and University Policies sections of this catalog for explanation of the course numbering system, unit or credit hour, prerequisites, and related information.*

**LOWER DIVISION COURSES**

**ENV S 100. Environmental Sciences (3)**

The earth as an ecosystem composed of biological, chemical, and physical systems and how these systems interact with one another and the human population.

**ENV S 299. Special Study (3)**

Prerequisite: Consent of program director and instructor.  
Individual Study.

**UPPER DIVISION COURSES  
(Intended for Undergraduates)**

**ENV S 498A-498B. Senior Seminar in Environmental Sciences (3-3)**

Prerequisite: Senior standing in the environmental sciences major.  
Research projects related to an environmental issue in the San Diego and California region.

