

What Do Toxicology Majors Study?

Preparatory courses in biology, chemistry, mathematics, and physics provide the fundamental principles which underlie toxicology. Students in the major will learn the environmental fates and biological activities of different classes of toxic substances, and the legislative issues which arise from chemical use. Opportunities are available to develop in-depth understanding in areas of interest, while hands-on laboratory courses prepare students with practical application for future careers.



MAJOR EMPHASES

Emphases allow students to customize their toxicology experience, and include:

- 1. Ecotoxicology and Environmental Chemistry:** Aquatic Toxicology; Ecology; Chemical Fate
- 2. Forensic Science and Regulatory Toxicology:** Forensic Science; Public Health; Environmental Policy and Management
- 3. Molecular and Biomedical Toxicology:** Medicine; Pharmacology; Veterinary Medicine; Biotechnology; Food Toxicology
- 4. Student Designed Emphasis.** With guidance from a faculty advisor, students can design their own emphases.

Major Requirements

Preparatory Courses:

- General Chemistry
- Organic Chemistry
- General Biology
- Calculus
- Physics
- Statistics
- Upper Division Writing

Depth Subject Matter:

- BIS 102: Biochemistry
- BIS 101 or BIS 103: Genetics or Metabolism
- 101: Principles of Environmental Toxicology
- 102A: Environmental Fate of Toxicants
- 102B: Quantitative Analysis of Environmental Toxicants
- 103A: Biological Effects of Toxicants
- 103B: Biological Effects of Toxicants, Experimental Approaches

Elective ETX Courses (Choose 3)

- 104: Nutritional Toxicology
- 120: Aquatic Toxicology
- 127: Environmental Stress & Development in Marine Organisms
- 128: Food Toxicology
- 130: Toxicology in Modern Industry
- 131: Toxicology of Air Pollutants
- 135: Health Risk Assessment of Toxicants
- 138: Legal Aspects of Toxicology
- 146: Exposure & Dose Assessment

Major Emphasis Restricted Electives. *Restricted Electives include additional ETX courses, relevant courses from other departments, internships, and lab research.*



ETX Student working with brine shrimp in the *Biological Effects of Toxicants* course.

UC DAVIS

ENVIRONMENTAL TOXICOLOGY MAJOR



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What Is Environmental Toxicology?

Environmental Toxicology is the study of the effects of chemicals on human health and the environment. By applying the principles of biology and chemistry, toxicologists can study the toxic behavior of man-made and natural chemicals. Using this knowledge, we can predict where chemicals will end up in the environment and in our bodies, determine what toxic impacts chemicals have, and establish exposure limits to keep us and our environment healthy.



An Agriculture and Environmental Chemistry Graduate Student in Professor Qi Zhang's research group working on air sampling.

Career Opportunities

What types of careers are open to graduates of Environmental Toxicology? Because of the major's flexibility and the focus on hands-on application, our graduates are well prepared to jump right into the workforce. Our alumni entertain a wide range of career opportunities in the chemical industry, pharmaceutical industry, biotechnology, and environmental consulting firms. Graduates are highly sought by governmental agencies such as the U.S. Environmental Protection Agency (EPA), California's EPA (Cal-EPA), the California Department of Food & Agriculture, and the California Department of Pesticide Regulation. Following are a few examples of career options:

- Analytical Chemist
- Biohazard Specialist
- Environmental Consultant
- Pest Control Advisor
- Epidemiologist
- Forensic Analyst
- Public Health Manager
- Educator
- Toxicologist/
Product Safety Specialist
- Medical Practitioner
(physician assistant, nurse)
- Medical or Environmental
Researcher
- Pharmacist



Undergraduate Research at BML
Environmental Stress & Development in Marine Organisms (ETX 127) is a six-week summer course taught at the UC Davis Bodega Marine Lab (BML). After two weeks of lectures and hands-on lab and field studies, students will have the opportunity to develop, conduct, and present their own research project.



Further Education

Many Environmental Toxicology Graduates pursue graduate school or profession programs, including medicine, dentistry, pharmacy, veterinary medicine, and law. Students often continue with graduate school to receive masters and doctorates in public health, environmental chemistry, pharmacology and forensic science.

The Environmental Toxicology Department at UC Davis administers two graduate programs: The Agricultural and Environmental Chemistry graduate group and the Pharmacology and Toxicology graduate group. Other graduate groups that are involved in toxicology at UC Davis include Atmospheric Sciences, Biology (Biochemistry, Molecular, Cellular, and Developmental), Ecology, Food Science, and Forensic Science.