ENVIRONMENTAL SCIENCE, B.S.

Objectives

The objective of the Environmental Science major is to prepare students for a career in the field of environmental sciences. Students receiving this degree can either pursue graduate studies or enter the field of environmental science where jobs are available, for example, with private businesses, governmental agencies, and environmental non-profits and advocacy groups.

The Environmental Science major is a rigorous interdisciplinary program involving course work in biology, chemistry, physics, mathematics, and environmental science and engineering. The learning outcomes for this degree program are:

1. Students will be able to apply the scientific method to formulate and test hypotheses.
2. Students will be able to assess and evaluate effectively global environmental processes embedded in a social and ethical context.
3. Students will have proficiency in the following: Earth systems science, micro- and macroevolution, ecosystem services, and anthropogenic impacts on ecosystems.
4. Students will have proficiency in the fundamental concepts of the physical and life sciences.
5. Students will have basic field, laboratory, and analytic skills in a quantitative capacity.
6. Students will effectively communicate through written assignments and oral presentations.
7. Students will demonstrate critical thinking skills needed for assessing and solving problems relating to environmental issues and policies.

Laboratory courses are designed to maximize hands-on experience in collecting samples from various media, and using an array of equipment to characterize samples of soils, water, and air. Many of the environmental science courses include field trips to the adjacent Ballona Wetlands and Santa Monica Bay to demonstrate methods for collecting samples, and to study environmental conditions and resident biota. Internships with local environmental organizations and companies are an integral component of the program. The major requires that the student conduct a research project followed by presentation of results upon completion.

Major Requirements

Code	Title	Semester Hours
Lower Division Requirements [1]		
BIOL 101	General Biology I	3
BIOL 102	General Biology II	3
BIOL 111	General Biology I Lab	2
BIOL 112	General Biology II Lab	2
BIOL 201	Cell Function	3
CHEM 110	General Chemistry I	3
CHEM 111	General Chemistry I Lab	1
CHEM 112	General Chemistry II	3
CHEM 113	General Chemistry II Lab	1
ENVS 102	Environmental Science and Sustainability	3
ENVS 112	Environmental Field Sampling and Data Analysis	0-3
ENVS 190	Environmental Science Seminar	0
ENVS 240	Environmental Statistical Analysis and GIS	4
EVST 1000	Introduction to Environmental Studies	4
MATH 122	Calculus for the Life Sciences I	3
or MATH 131	Calculus I	
MATH 123	Calculus for the Life Sciences II	3
or MATH 132	Calculus II	
PHYS 2500	General Physics I	4
Subtotal		42-45
Upper Division Requirements [2]		
ENVS 318	Principles of Ecology	4
ENVS 350	Earth System Science	3
ENVS 357	Environmental Chemistry: Atmosphere and Climate	3
ENVS 358	Environmental Chemistry: Water, Soil, and Sediment	3
ENVS 359	Environmental Chemistry Laboratory	1
ENVS 460	Environmental Microbiology	3
ENVS 470	Environmental Monitoring: Practice and Impacts	1
ENVS 491	Environmental Science Capstone I	1
ENVS 492	Environmental Science Capstone II	1
ENVS 493	Environmental Science Internship (enroll in 1 semester hour)	1-3
A total of 4 upper division courses (10-16 units) can be selected from:		10
Courses Within Seaver College		
ENVS 505	Aquatic Chemistry	
ENVS 507	Environmental Engineering and Science Lab	
ENVS 508	Contaminant Fate, Transport, and Remediation	
ENVS 580	Engineering Geology	
ENVS 584	Climate Change and Impacts	
BIOL 311	Plant Interactions	
BIOL 312	Field Botany	
BIOL 315	World Vegetation Ecology	
BIOL 319	Coastal Ecology	
BIOL 320	Coastal Ecology Lab	
BIOL 321	Urban Ecology	
BIOL 322	Urban Ecology Lab	
BIOL 325	Avian Biology Lab	
BIOL 335	Comparative Anatomy	
BIOL 327	Quantifying Biodiversity Field Laboratory	
BIOL 362	General Microbiology Laboratory	
BIOL 422	Marine Biology	
BIOL 423	Marine Conservation Biology	
BIOL 474	Principles of Evolution (*)	
CHEM 356	Sustainable Practices	
CHEM 398	Special Studies	
CHEM 460	Instrumental Analysis and Lab (*)	
CHEM 482	Toxicology (*)	
CHEM 560	Introduction to Modern Spectroscopy	
CIVL 551	Remote Sensing with Civil Engineering and Environmental Science Applications	

CIVL 553	Modeling Environmental and Water Resources Systems	
CIVL 571	Air Quality, Control, and Management	
CIVL 572	Sustainable Waste Management	
CIVL 601	Sustainable Water Quality and Resources	
HHSC 3220	Public Health	
Courses Outside of Seaver College		
ECON 4160	Environmental Economics (*)	
EVST 3010	Environmental Policy	
EVST 3020	Sustainable Cities	
EVST 3110	Agriculture, Food, and Justice	
HIST 3452	US Environmental History	
HIST 3820	Environment and Economy in China	
INBA 4895/ MGMT 4695	Global Sustainability: Challenges and Prospects in East Asia	
MGMT 3690	Environmental Strategy	
SOCL 3360	Environment and Society	
URBN 3100	GIS Research	
WGST 3200	Gender, Race, and Environmental Justice	
Subtotal		31-33
Total Semester Hours		**73-78**

1

Note: In order to be eligible to take an upper division science course, a student must have a C (2.0) average in the lower division science courses.

2

Note: A student must have a C (2.0) average in upper division science courses.

Notes:

- Students are also urged to consider taking PHIL 3110: Environmental Ethics to fulfill their Core: Integrations: Ethics and Justice requirement
- Courses in the above lists with an asterisk require additional pre-requisite courses outside of the ENVS major.
- Up to 2 of the 4 upper division science elective courses may be taken outside of Seaver College.
- Up to 1 of the 4 upper division science elective courses may be fulfilled by taking a laboratory course.
  - It can be a stand-alone 1-unit laboratory course.
  - It can be part of a combined lecture and laboratory course. (Note that a combined lecture and laboratory course counts as fulfilling 2 of the upper division science elective courses.)

B.S. Degree in Environmental Science

(126 S.H.)

Course	Title	Semester Hours
First Year		
Fall		
CHEM 110	General Chemistry I	3
CHEM 111	General Chemistry I Lab	1
ENVS 102	Environmental Science and Sustainability	3
ENVS 112	Environmental Field Sampling and Data Analysis	1
ENVS 190	Environmental Science Seminar	0
FFYS 1000 or RHET 1000	First Year Seminar or Rhetorical Arts	4
MATH 122 or MATH 131	Calculus for the Life Sciences I or Calculus I	3-4
ORNT 1000	First Year Forum	0
	Semester Hours	**15-16**
Spring		
CHEM 112	General Chemistry II	3
CHEM 113	General Chemistry II Lab	1
EVST 1000	Introduction to Environmental Studies	4
MATH 123 or MATH 132	Calculus for the Life Sciences II or Calculus II	3-4
RHET 1000 or FFYS 1000	Rhetorical Arts or First Year Seminar	4
	Semester Hours	**15-16**
Sophomore Year		
Fall		
BIOL 101	General Biology I	3
BIOL 111	General Biology I Lab	2
ENVS 240	Environmental Statistical Analysis and GIS	4
Elective		3-4
University Core		4
	Semester Hours	**16-17**
Spring		
BIOL 102	General Biology II	3
BIOL 112	General Biology II Lab	2
ENVS 350	Earth System Science	3
PHYS 2500	General Physics I	4
University Core		4
	Semester Hours	**16**
Junior Year		
Fall		
BIOL 201	Cell Function	3
ENVS 357	Environmental Chemistry: Atmosphere and Climate	3
ENVS 493	Environmental Science Internship (enroll in at least 1 semester hour)	1
Elective		3-4
University Core		4
	Semester Hours	**14-15**
Spring		
ENVS 318	Principles of Ecology	4
ENVS 358	Environmental Chemistry: Water, Soil, and Sediment	3
ENVS 359	Environmental Chemistry Laboratory	1
Upper Division Major Elective		3-4
University Core		4
	Semester Hours	**15-16**
Senior Year		
Fall		
ENVS 460	Environmental Microbiology	3
ENVS 491	Environmental Science Capstone I	1
Upper Division Major Elective		3-4
Upper Division Elective		4
University Core		4
	Semester Hours	**15-16**
Spring		
ENVS 470	Environmental Monitoring: Practice and Impacts	1
ENVS 492	Environmental Science Capstone II	1
Upper Division Major Elective		3-4
Upper Division Major Elective		1-4
Upper Division Major Elective		4

Elective	4
Semester Hours	**14-18**
Minimum Semester Hours	**120-130**

Dean's list requires a minimum of 15 semester hours.