BACHELOR OF SCIENCE, MAJOR IN ENVIRONMENTAL SCIENCE (POLLUTION ABATEMENT)

Environmental Science Degree

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Website: Department of Environmental and Geosciences (https://www.shsu.edu/academics/geography-geology/)

Environmental scientists seek to protect both environmental and human health by assessing problems and seeking to find solutions through field, lab, and/or computer-based work. Working in environmental science-related jobs can involve collecting and analyzing soil, water, or air samples, mapping wetlands and disasters, or modeling how pollution is moving through rivers, aquifers, and the air. Environmental Scientists may even find themselves informing the general public about hazards or testifying in court cases.

Environmental Scientists:

- Work in the private sector, government, or non-governmental positions
- Work in environmental consulting and for environmental engineering firms
- Work on enforcing or improving environmental regulations, laws, and policies
- Advise government officials responsible for developing policies
- Assess possible environmental and health impacts of development projects
- Serve as community advocates to ensure clean water and air for vulnerable populations

No matter the sector they work in, environmental scientists are typically broadly trained across multiple disciplines. Course work for environmental science is hands-on and lab-science heavy, including Biology, Chemistry, Geography, Geology, and Soil Science. In addition to being well versed in analyzing data using mathematical and statistical methods, environmental scientists must also have strong writing and oral communication skills. Further, it is important that environmental scientists understand societal impacts and the context of their physical science work through additional perspectives drawn from human geography, sociology, and political science.

Academic Programs

The Environmental Science degree has a choice of three tracks/concentrations and is designed to fit the particular academic interests of our students and better prepare them for life beyond SHSU, particularly in terms of employment opportunities or graduate study. Students majoring in Environmental Science focus their studies within one of three concentrations: 1) Sustainability; 2) Pollution Abatement; or 3) Water Resources. All three concentrations require several core lab science courses in Biology, Chemistry, Geography, and Geology to provide an interdisciplinary foundation for upper-level coursework. Sustainability allows for more elective courses for those that want a broad Environmental Science background and more social science courses. Pollution Abatement is designed for students that want to focus on Biology and Chemistry-related Environmental Science work. Water Resources provides students with a strong foundation to assess water-related issues and includes courses in Aquatic Biology, Surface Water, Groundwater, and Water Quality-related applications. Across the Environmental Science concentrations, students gain experience in labs and the field. Students are also encouraged to pursue internship opportunities that can be counted toward prescribed major elective hours.

Highlights

Combining the strengths of SHSU's Agriculture, Biology, Chemistry, and Environmental and Geosciences programs, Environmental Science is a great choice for students that want to help communities and solve problems. It's also a great choice for students that like science but have a hard time picking just one area of scientific interest. Students get diverse perspectives from different physical scientists and take some selected social science courses to understand how Environmental Science fits in a broad societal context. While the home of the program is located on the third floor of the Lee Drain Building, where the Geographic Information System (GIS) lab, remote sensing lab, Geology labs, and GPS units are located, students in Environmental Science have access to Chemistry labs and the state-of-the-art Biological Lab Sciences building. Multiple trips to SHSU's Field Station (https://www.shsu.edu/centers/cbfs/) are also included through multiple courses. Students in Environmental Science have access to the College of Science and Engineering Technology (https://www.shsu.edu/academics/science-and-engineering-technology/)'s two 12-passenger vans for field trips and equipment across multiple contributing physical science departments. In order to enhance learning, all of our rooms are outfitted with video-projection systems, and our lecture rooms have sound systems and dedicated computers with Internet access that are used by the instructors for teaching purposes. A number of our students obtain internships with Houston-area firms and organizations and other companies and agencies across the state and beyond. Students also work with faculty members on a range of research projects. While there are some online elective course options, Environmental Science includes multiple hands-on, lab-oriented courses. The degree also regularly offers a number of field opportunities for students to learn outside the classroom. Some of these field courses involve travel and/or international experiences and have included trips to central Texas, the Texas coast, Hawaii, Central America, Europe, and Africa.

Career Opportunities

Because of the breadth of Environmental Science, there is a wide variety of career opportunities for graduates. These opportunities include careers in the following:

- Environmental Consulting
- Environmental Planning
- Environmental Policy and Politics
- Environmental compliance (inc. for Construction and Oil and Gas companies)
- Water management and policy
- Waste remediation and management
- Environmental Engineering
- Sustainability officer
- Conservation
- Environmental Protection
- Environmental Law
- Emergency Management
- Lab analyst (air, soil, water, contamination, etc.)
- Public Health
- Department of Transportation
- City, county, state, and federal government
- Education
- Military

Environmental Scientists' broad backgrounds allow them to solve problems that require multiple disciplinary perspectives. Environmental scientists often work in the field, lab, or both. Many also write up reports that relate to development and current regulations and policies.

Suggested Minors

- NO MINOR IS REQUIRED WITH AN ENVIRONMENTAL SCIENCE MAJOR
- If students choose to do a minor, it may add time to their degree plan.

Additional information: Reference the Program Landing Page (https://www.shsu.edu/programs/bachelor-of-science-in-environmental-science/) for additional information, such as cost, delivery format, contact information, or to schedule a visit.

Code	Title	Hours
Bachelor of Science, Major in Environmental Science (Pollution Abatement)		
Core Curriculum		
Component Area I (Communication)		6
Component Area II (Mathematics) [1]		3
Component Area III (Life and Physical Science) [2]		8
Component Area IV (Language, Philosophy, and Culture) [3]		3
Component Area V (Creative Arts)		3
Component Area VI (U.S. History)		6
Component Area VII (Political Science/Government)		6
Component Area VIII (Social and Behavioral Sciences) [4]		3
Component Area IX (Component Area Option) [5]		4
Degree Specific Requirements		
BIOL 1406	General Biology I	4
BIOL 1407	General Biology II	4
CHEM 1411	General Chemistry I	4
CHEM 1412	General Chemistry II	4
MATH 1342	Elementary Statistics	3
or STAT 3379	Statistical Methods in Practice	
or MATH 3379	Statistical Methods in Practice	
MATH 1420	Calculus I [1]	4
Major: Foundation		
BIOL 1401	Environmental Science	4

BIOL 3320	Sustainability & Environment	3
or GEOG 3320	Sustainability & Environment	
BIOL 3409	General Ecology	4
BIOL 4330	Aquatic Biology	3
BIOL 4374	Biostatistics	3
CHEM 2323 & CHEM 2123	Organic Chemistry I: Lecture and Organic Chemistry I: Lab	4
CHEM 2401	Quantitative Analysis	4
CHEM 3368	Environmental Chemistry	3
GEOG 1401	Weather and Climate [2]	4
GEOG 4331	Conservation of Natural Resources	3
GEOL 1403	Physical Geology [2]	4
GEOL 3326	Environmental Geology	3
GEOL 4426	Hydrogeology	4
GEOL 4304	Geochemistry	3
PLSC 3440	Soil Science	4
POLS 3395	Environmental Policy	3
Major: Prescribed Electives		
Select 11 hours from the following (at least 9 hours must be advanced):		11
AGET 3383	Soil & Water Conservation Engineering	
BIOL 2420	Introduction to Applied Microbiology	
BIOL 3461	Wildlife Biology	
BIOL 3470	General Microbiology	
BIOL 4320	Environmental Toxicology	
CHEM 2125	Organic Chemistry II: Lab	
CHEM 2325	Organic Chemistry II: Lecture	
CHEM 4442	Air Quality	
ECON 3352	Energy and Environmental Economics	
ENGL 3330	Introduction to Technical Writing	
GEOG 3301	Environmental Geography	
GEOG 3310	Sustainable Development	
GEOG 4100	Earth and Environment Seminar	
GEOG 4330	Hydrology and Water Resources	
GEOG 4333	Field Studies	
GEOG 4361	Geographic Information Systems for Public Health	
GEOG 4365	Applied Geographic Information Systems (GIS)	
GEOG 4399	Environmental and Geoscience Internship	
GEOG 4432	Geomorphology	
GEOG 4468	Remote Sensing	
GEOL 3330	Oceanography	
GEOL 4100	Earth and Environment Seminar	
GEOL 4312	Economic Geology	
GEOL 4399	Environmental and Geoscience Internship	
HLTH 4390	Environmental Health	
PLSC 4330	Soil Fertility Management and Fertilizers	
PLSC 4370	Forage Crops and Pasture Management	
PLSC 4397	Integrated Pest Management	
WMGT 2301	Principles of Wildlife Management	
WMGT 3382	Habitat & Pond Management	
Minor: Not Required [6]		
Total Hours		**120**

1 MATH 1420 is suggested, if eligible; otherwise, take MATH 1314. MATH 1420 satisfies three semester credit hours of the Core Curriculum requirement for Component Area II (Mathematics) and one semester credit hour for Component Area IX (Component Area Option).
2 Satisfies Core Curriculum requirement for Component Area III (Life and Physical Science).
3 SOCI 2319 is needed as a prerequisite for SOCI 4339.
4 ECON 2301 or ECON 2302. ECON 2301 is needed as a prerequisite for ECON 3352.
5 GEOG 2355 or GEOG 2356 is suggested plus one additional credit hour from Component Area IX (Component Area Option) if MATH 1420 or MATH 1410 are not taken.
6 A minor is **not required** for this degree program; however, a student has the option to add a minor, but to do so, additional semester credit hours will be needed above the degree program's stated total semester credit hours.

Notes

Students must earn a 2.0 minimum overall GPA in all coursework.

Students must meet a 2.0 minimum overall major GPA in all major coursework.

Students must earn a 2.0 minimum SHSU GPA in all coursework.

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First Year

Fall	Hours	Spring	Hours
Component Area IV[1]	3	Component Area IX[5]	3
CHEM 1411	4	BIOL 1401	4
ENGL 1301[2]	3	CHEM 1412	4
HIST 1301[3]	3	ENGL 1302[2]	3
MATH 1420 (If eligible)[4]	4	HIST 1302[3]	3
	17		**17**

Second Year

Fall	Hours	Spring	Hours
BIOL 1406	4	BIOL 1407	4
CHEM 2123	1	CHEM 2401	4
CHEM 2323	3	GEOG 1401[6]	4
GEOL 1403[6]	4	POLS 2306[7]	3
POLS 2305[7]	3		
	15		**15**

Third Year

Fall	Hours	Spring	Hours
Component Area V	3	BIOL 3409	4
Component Area VIII[8]	3	GEOL 3326	3
BIOL 3320 or GEOG 3320	3	MATH 1342, 3379, or STAT 3379	3
CHEM 3368	3	POLS 3395	3
PLSC 3440	4		
	16		**13**

Fourth Year

Fall	Hours	Spring	Hours
BIOL 4330	3	GEOG 4331	3
BIOL 4374	3	Prescribed Electives[9]	3
GEOL 4304	3	Prescribed Electives[9]	8
GEOL 4426	4		
	13		**14**

Total Hours: 120

1 SOCI 2319 is needed as a prerequisite for SOCI 4339.
2 Satisfies Core Curriculum requirement for Component Area I (Communication).
3 Satisfies Core Curriculum requirement for Component Area VI (U.S. History).
4 Satisfies three semester credit hours of the Core Curriculum requirement for Component Area II (Mathematics) and one semester credit hour for Component Area IX (Component Area Option).
5 GEOG 2355 or GEOG 2356 is suggested plus one additional credit hour from Component Area IX (Component Area Option) if MATH 1420 or MATH 1410 are not taken.
6 Satisfies Core Curriculum requirement for Component Area III (Life and Physical Science).
7 Satisfies the Core Curriculum requirement for Component Area VII (Political Science/Government).
8 ECON 2301 or ECON 2302. ECON 2301 is needed as a prerequisite for ECON 3352.
9 See, Prescribed Electives course listing below.

Code	Title	Hours
Prescribed Electives [9]		
Select 11 hours from the following (at least 9 hours must be advanced):		11
AGET 3383	Soil & Water Conservation Engineering	3
BIOL 2420	Introduction to Applied Microbiology	4
BIOL 3461	Wildlife Biology	4
BIOL 3470	General Microbiology	4
BIOL 4320	Environmental Toxicology	3
CHEM 2125	Organic Chemistry II: Lab	1
CHEM 2325	Organic Chemistry II: Lecture	3
CHEM 4442	Air Quality	4
ECON 3352	Energy and Environmental Economics	3
ENGL 3330	Introduction to Technical Writing	3
GEOG 3301	Environmental Geography	3
GEOG 3310	Sustainable Development	3
GEOG 4100	Earth and Environment Seminar	1
GEOG 4330	Hydrology and Water Resources	3
GEOG 4333	Field Studies	3
GEOG 4361	Geographic Information Systems for Public Health	3
GEOG 4365	Applied Geographic Information Systems (GIS)	3
GEOG 4399	Environmental and Geoscience Internship	3
GEOG 4432	Geomorphology	4
GEOG 4468	Remote Sensing	4
GEOL 3330	Oceanography	3
GEOL 4100	Earth and Environment Seminar	1
GEOL 4312	Economic Geology	3
GEOL 4399	Environmental and Geoscience Internship	3
HLTH 4390	Environmental Health	3
PLSC 4330	Soil Fertility Management and Fertilizers	3
PLSC 4370	Forage Crops and Pasture Management	3
PLSC 4397	Integrated Pest Management	3
WMGT 2301	Principles of Wildlife Management	3
WMGT 3382	Habitat & Pond Management	3

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The Texas Higher Education Coordinating Board (THECB) marketable skills initiative is part of the state's **60x30TX plan** and was designed to help students articulate their skills to employers. Marketable skills are those skills valued by employers and/or graduate programs that can be applied in a variety of work or education settings and may include interpersonal, cognitive, and applied skill areas.

The BS in Environmental Science (Pollution Abatement) is designed to provide graduates with the following marketable skills:

- Use the scientific method to address environmental problems.
- Think critically and problem solve.
- Use statistics to evaluate hypotheses.
- Chemically analyze soil, water, and/or air samples.
- Apply knowledge of ecosystems and the environment to address environmental issues.