

# ENVIRONMENTAL SCIENCE

The ENSC degree is administered by the Department of Physical Sciences within the College of Arts and Sciences. Consult with the College of Arts and Sciences Academic Advising Office for a list of faculty advisors.

Environmental Science careers require scientists who are: educated in more than one discipline, technically skilled, and aware of the political and social aspects of environmental problems. An understanding of both basic science and applied science is important for this dynamic area of study. Therefore, the degree requires strong foundations of supporting science courses in biology, chemistry, geology and physics. These courses provide students with the needed breadth and depth of knowledge to understand and address both natural resources and the complex environmental problems facing modern society.

The B.S. degree in Environmental Science at the University of Texas of the Permian Basin is designed for students who expect to work professionally in laboratory or field settings in environmental science. It provides an understanding of both basic science and applied science. Specific coursework includes a variety of topics ranging from ecology, to geographic information systems and environmental law, while obtaining the critical hands-on experience of statistical sampling and instrumental analysis skills in courses such as analytical chemistry. No minor is required for this degree.

Students in the program are also strongly encouraged to join the National Association of Environmental Professionals (NAEP) which provides opportunities for professional growth and interactions with professionals in the field.

## Degree Requirements

The total semester credit hours required for a B.S. in Environmental Science is **120**.

### General Education

**47 credits**

Complete the requirements shown in the General Education Requirements section of this catalog including the following specific courses.

Freshman Seminar	UNIV 1101 (if not a transfer student)
Mathematics	MATH 2413
Physics	PHYS 1301-1101 or PHYS 2325-2125
Geology	GEOL 1301-1101, 1302-1102

### Common Core Lower Level Courses

**19 credits**

COSC 1335	Computers & Problem Solving	3
BIOL 1306-1106	General Biology I	4
BIOL 1307-1107	General Biology II	4
CHEM 1311-1111	General Chemistry I	4
CHEM 1312-1112	General Chemistry II	4

### Major Requirements Upper Level Courses

**54 credits**

#### Supporting Science Courses (30 sch):

BIOL 3300-3101	Microbiology	4
BIOL 4372	Ecology	3
CHEM 3411-3113	Organic Chemistry I	5
CHEM 3114	Organic Chemistry Lab II	1
CHEM 3324-3225	Analytical Chemistry	5
GEOL 3317	Environmental Geology	3
GEOL 3329	Geographic Information Systems	3
GEOL 4316	Earth Resources & Environment	3
MATH 3301	Statistics (or similar course)	3

#### Environmental Science Courses (24 sch):

ENSC 3301-3103	Environmental Science I	4
ENSC 3302-3104	Environmental Science II	4
ENSC 3310	Water Quality	3
ENSC 3315	Air Quality	3
ENSC 3320	Environmental Law	3
ENSC 4329	GIS Applications	3
ENSC 4360	Adv ENVIS Topics	3
ENSC 4195	Research	1

## ENSC Minor

A minor in ENSC is not currently available due to the numerous pre-requisite courses in several disciplines.

## Course Listing

### ENSC 3301 Environmental Science I (3)

This complete survey of modern environmental science and environmental engineering covers the spheres of the environment: water, air, earth, life, and human activities, especially technologies, which affect the earth and its bio-sphere. This course covers the first half of the textbook. Prerequisites: BIOL 1306, 1307, CHEM 1311, 1312, GEOL 1301, 1302. Co-requisite: ENSC 3103. F

### ENSC 3103 Environmental Science I Lab (1)

Laboratory experiments and projects aligned with the topics covered in ENSC 3301 and may include demonstrations and field trips. Co-requisite: ENSC 3301. F

### ENSC 3302 Environmental Science II (3)

This complete survey of modern environmental science and environmental engineering covers the spheres of the environment: water, air, earth, life, and human activities, especially technologies, which affect the earth and its bio-sphere. This course covers the second half of the textbook. Prerequisite: ENSC 3301, 3103. Co-requisite: ENSC 3304. S

### ENSC 3104 Environmental Science II Lab (1)

Laboratory experiments and projects aligned with the topics covered in ENSC 3302 and may include demonstrations and field trips. Co-requisite: ENSC 3302. S

### ENSC 3310 Water Quality (3)

Sampling, physical, chemical, and biological properties of water, methods of water and wastewater treatments and the quality of reclaimed water will be discussed, including topics such as water pollution, measurement of water quality, water law and standards, and solid waste management. Prerequisites: ENSC 3302, 3104. F

### ENSC 3315 Air Quality (3)

Provides a comprehensive overview of air quality issues, including a better understanding of atmospheric chemistry, the effects of pollution on public health and the environment, and the technology and regulatory practices used to achieve air quality goals. Prerequisites: ENSC 3302, 3104. S

### ENSC 3320 Environmental Law (3)

To understand how environmental laws are made and how disputes are resolved, the history and the need for some Federal and selected State environmental laws such as National Environmental Policy Act, Pollution Prevention Act, Clean Air Act, Clean Water Act, etc. is taught. Prerequisite: ENSC 3302, 3104. F

### ENSC 4329 Geographical Information Systems (GIS) Applications (3)

Principles and techniques of spatial data collection, handling, analysis, and visualization are continued. Application of geographic information systems technology in land use, ecology, resource management, environmental site evaluation, demographics and marketing, and map-making. Hands-on experience with workstation and ware is included. Prerequisite: GEOL 3329. S.

### ENSC 4360 Environmental Science Topics (3)

Topics in environmental science which may include for examples: environmental impact assessment, environmental health and toxicology, oceanography, land reclamation, green chemistry, and sustainable energy. ENVS 3302, 3104. S

### ENSC 4195 Research in Environmental Science (1)

An introduction to research related to environmental issues and problems. Repeatable for credit up to three hours maximum. Prerequisite: ENSC 3302, 3104. F, S, Sm.

## Degree plan example: BS IN ENVIRONMENTAL SCIENCE

The following degree plan is an example of how courses can be arranged to give reasonable loads each semester, places certain courses in the appropriate semester in which they are offered, and assures that certain pre-requisites are completed before more advanced courses. Individualized degree plans are arranged for each student by their faculty advisor.

### Freshman Year

Fall	Spring	Summer
ENGL 1301                    3	ENGL 1302                    3	PHYS 1301/1101            4
HIST 1301                    3	HIST 1302                    3	
COSC 1335                    3	MATH 2413                    4	
GEOL 1301/1101            4	GEOL 1302/1102            4	
UNIV 1101                    1		
<b>Total</b> <b>14</b>	<b>14</b>	<b>4</b>

### Sophomore Year

Fall	Spring	Summer
PLSC 2301                    3	PLSC 2302                    3	COMM 1315                    3
BIOL 1306/1106            4	BIOL 1307/1107            4	
CHEM 1311/1111            4	CHEM 1312/1112            4	
MATH 3301                    3	ART 1301                    3	
<b>Total</b> <b>14</b>	<b>14</b>	<b>3</b>

### Junior Year

Fall	Spring	Summer
ENSC 3301/3103            4	ENSC 3302/3104            4	ENSC 4395                    1
GEOL 3317                    3	BIOL 3300/3100            4	ENGL 2322                    3
CHEM 3411/3113            5	CHEM 3114                    1	
	ECON 2301                    3	
<b>Total</b> <b>12</b>	<b>12</b>	<b>4</b>

### Senior Year

Fall	Spring
ENSC 3310                    3	ENSC 3315                    3
ENSC 3320                    3	BIOL 4372                    3
GEOL 3329                    3	ENSC 4329                    3
CHEM 3324/3325            5	ENSC 4360                    3
	GEOL 4316                    3
<b>Total</b> <b>14</b>	<b>15</b>