

# BACHELOR OF SCIENCE IN ENVIRONMENTAL SCIENCE

**Web Site:** <https://twu.edu/environmental-science/>

Bachelor of Science in Environmental Science is an interdisciplinary major offered through the School of the Sciences. The B.S. in Environmental Science provides broad training in multiple scientific disciplines, as well as technology and communication, to prepare students for a range of careers in the environmental sciences. The program also engages with community stakeholders through strong external partnerships that enrich students' educational experiences and provide new pathways to employment in STEM fields following graduation.

## Marketable Skills

Defined by the Texas Higher Education Coordinating Board's 60x30 Strategic Plan (<https://reportcenter.highered.texas.gov/agency-publication/miscellaneous/thecb-60x30-strategic-plan/>) as, "Those skills valued by employers that can be applied in a variety of work settings, including interpersonal, cognitive, and applied skills areas. These skills can be either primary or complementary to a major and are acquired by students through education, including curricular, co-curricular, and extracurricular activities."

1. Effectively communicate scientific and technical information to an interdisciplinary audience.
2. Apply qualitative and quantitative research methods to scientific problems.
3. Think critically about environmental problems and propose effective solutions.

## Admissions

All applicants must meet the general undergraduate admission requirements (<https://catalog.twu.edu/undergraduate/admission-information/>).

## Degree Requirements

**Total Semester Credit Hours (SCH):** 120

**Major:** 42 SCH; **Required Minor:** 18 SCH

**Program Code:** ENVSCIENCE.BS; **CIP Code:** 03.0104.00

### Texas Core Curriculum

Code	Title	SCHs
ENG 1013	Composition I (10)	3
ENG 1023	Composition II (10)	3
Mathematics (20)		3
Life & Physical Sciences (30)		6
Language, Philosophy, & Culture (40)		3
Creative Arts (50)		3
HIST 1013	History of the United States, 1492-1865 (60)	3
HIST 1023	History of the United States, 1865 to the Present (60)	3
POLS 2013	U.S. National Government (70)	3
POLS 2023	Texas Government (70)	3

Social & Behavioral Sciences (80)	3
CAO: Multicultural-Women's Studies (90)	3
CAO: First Year Seminar, Wellness or Mathematics (91)	3
<b>Total SCHs</b>	<b>42</b>

### Courses Required for Major

Code	Title	SCHs
BIOL 2113 & BIOL 2111	Plant Biology and Plant Biology Laboratory	4
BIOL 4223 & BIOL 4221	Ecology and Ecology Laboratory	4
CSCI 3373	Geographic Information Systems	3
ENG 3253 or BIOL 4293	Technical Writing Scientific Communication	3
ENVS 1213	Introduction to Environmental Science	3
ENVS 4933	Capstone in Environmental Science	3
POLS 4813	Seminar in Public Policy	3
SCI 2113	Earth Science: Global Perspectives	3
SCI 3013	Community Conversation in Sustainability	3
SCI 3033	Water in a Changing Environment	3
SCI 3133	Climate Change: A Human Perspective	3

### Electives

Choose 7 SCH from the following		7
BACT 3113 & BACT 3111	General Microbiology and General Microbiology Laboratory	
BIOL 4903	Special Topics	
BIOL 4983	Undergraduate Research	
CHEM 2213 & CHEM 2211	Organic Chemistry I and Organic Chemistry Laboratory I	
CHEM 3223 & CHEM 3221	Organic Chemistry II and Organic Chemistry Laboratory II	
CHEM 3333 & CHEM 3331	Quantitative Chemical Analysis and Quantitative Chemical Analysis Laboratory	
CHEM 3633 & CHEM 3632	Biochemistry I and Biochemistry I Laboratory	
CHEM 3713 & CHEM 3711	Environmental Chemistry I and Environmental Chemistry Laboratory I	
CHEM 4903	Special Topics (with advisor permission)	
CHEM 4983	Undergraduate Research (with advisor permission)	
CSCI 3053	Data Structures	
CSCI 3113	Fundamentals of SAS Programming	
CSCI 4303	Advanced Modeling and Visualization	
CSCI 4313	Networking and Data Communication	
CSCI 3423	Database Management	
CSCI 4513	Data Warehousing	
CSCI 3603	Foundations of Data Science	
CSCI 4623	Big Data and High Performance Computing	
CSCI 3703	Interface Design and Development	
CSCI 4723	Machine Learning	
CSCI 4823	Principles of Data Mining	
CSCI 4903	Special Topics (with advisor permission)	
ENVS 4903	Special Topics	

HS 3403	Environmental Health and Safety Education
MATH 1713	Elementary Statistics II
MATH 2703	Data Collection
MATH 3583	Statistical Methods II
MATH 3593	Statistical Methods III
MATH 4013	Probability and Statistics
MATH 4113	Computational Statistics
MATH 4903	Special Topics (with advisor permission)
NFS 3063	Ecology of Foods and Nutrition
POLS 3153	Law, Politics, and Public Policy
POLS 4113	Public Administration
ZOOL 4033	Animal Behavior

**Total SCHs** **42**

### Departmental Requirements

Code	Title	SCHs
BIOL 1113 & BIOL 1111	Principles of Biology I and Principles of Biology I Laboratory	4
BIOL 1123 & BIOL 1121	Principles of Biology II and Principles of Biology II Laboratory	4
CSCI 2003 or CSCI 2493	Software Systems Design and Tools Programming Fundamentals II	3
MATH 1303 or MATH 2014	College Algebra Calculus I	3
MATH 1703	Elementary Statistics I	3
Chemistry I Requirement		4
CHEM 1113 & CHEM 1111 or CHEM 1213/1211	General Chemistry I and General Chemistry Laboratory I Principles of Chemistry I	
Chemistry II Requirement		4
CHEM 1123 & CHEM 1121 or CHEM 1223/1221	General Chemistry II and General Chemistry Laboratory II Principles of Chemistry II	
Physics I Requirement		4
PHYS 1133 & PHYS 1131 or PHYS 2153/2151	Principles of Physics I and Principles of Physics Laboratory I General Physics I	
<b>Total SCHs</b>		<b>29</b>

### Minor

Code	Title	SCHs
Selected Minor		18
<b>Total SCHs</b>		<b>18</b>

## Recommended Plan of Study

### First Year

Fall	TCCN	SCHs
BIOL 1113 & BIOL 1111	Principles of Biology I and Principles of Biology I Laboratory	BIOL 1406 & BIOL 1106 4
ENG 1013	Composition I	ENGL 1301 3

ENVS 1213	Introduction to Environmental Science	ENVR 1301	3
MATH 1303 or 2014	College Algebra or Calculus I	MATH 1314 or MATH 2413	3
UNIV 1231	Learning Frameworks: First-Year Seminar	EDUC 1100, EDUC 1200, EDUC 1300	1

**SCHs** **14**

Spring		TCCN	
BIOL 1123 & BIOL 1121	Principles of Biology II and Principles of Biology II Laboratory	BIOL 1407 & BIOL 1107	4
ENG 1023	Composition II	ENGL 1302	3
MATH 1703	Elementary Statistics I	MATH 1342	3
SCI 2113	Earth Science: Global Perspectives	GEOL 1401	3
Elective or Minor			2

**SCHs** **15**

### Second Year

Fall		TCCN	
BIOL 2113	Plant Biology	BIOL 1411	4
& BIOL 2111	and Plant Biology Laboratory	& BIOL 1111	
POLS 2013	U.S. National Government	GOVT 2305	3
Language, Philosophy, & Culture Core			3
Elective or Minor			2
Choose one of the following:			4
CHEM 1113	General Chemistry I	CHEM 1311	
	and General Chemistry Laboratory I	& CHEM	
& CHEM 1111		1111	
CHEM 1213	Principles of Chemistry I		
	and Principles of Chemistry		
& CHEM 1211	Laboratory I		

**SCHs** **16**

Spring		TCCN	
BIOL 4223	Ecology		4
& BIOL 4221	and Ecology Laboratory		
POLS 2023	Texas Government	GOVT 2306	3
Creative Arts Core			3
Choose one of the following:			4
CHEM 1123	General Chemistry II	CHEM 1312	
	and General Chemistry Laboratory II	& CHEM	
& CHEM 1121		1112	
CHEM 1223	Principles of Chemistry II		
	and Principles of Chemistry		
& CHEM 1221	Laboratory II		

**SCHs** **14**

### Third Year

Fall		TCCN	
CSCI 2003 or 2493	Software Systems Design and Tools or Programming Fundamentals II	COSC 1437	3
HIST 1013	History of the United States, 1492-1865	HIST 1301	3
SCI 3013	Community Conversation in Sustainability		3

Elective or Minor		6
<b>SCHs</b>		<b>15</b>
<b>Spring</b>	<b>TCCN</b>	
BIOL 4293 Scientific Communication or ENG 3253 or Technical Writing		3
HIST 1023 History of the United States, 1865 to the Present	HIST 1302	3
SCI 3033 Water in a Changing Environment		3
Multicultural Women's Studies CAO Core		3
Elective or Minor		3
<b>SCHs</b>		<b>15</b>
<b>Fourth Year</b>		
<b>Fall</b>	<b>TCCN</b>	
POLS 4813 Seminar in Public Policy		3
SCI 3133 Climate Change: A Human Perspective		3
Elective or Minor		6
Choose one of the following:		4
PHYS 1133 Principles of Physics I and Principles of Physics & PHYS 1133 Laboratory I	PHYS 1301 & PHYS 1101	
PHYS 2153 General Physics I and General Physics Laboratory I & PHYS 2151	PHYS 2325 & PHYS 2125	
<b>SCHs</b>		<b>16</b>
<b>Spring</b>	<b>TCCN</b>	
CSCI 3373 Geographic Information Systems		3
ENVS 4933 Capstone in Environmental Science		3
Social/Behavioral Science Core		3
Elective or Minor		6
<b>SCHs</b>		<b>15</b>
<b>Total SCHs:</b>		<b>120</b>