

# BACHELOR OF SCIENCE IN ENVIRONMENTAL SCIENCE

Web Site: <https://twu.edu/sciences/>

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/the60x30-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."

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

## Admissions

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

## Degree Requirements

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

**Major: 73 SCH; Required Minor: 18 SCH**

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

### Texas Core Curriculum

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

Social & Behavioral Sciences	3
CAO: Women's Studies	3
CAO: First Year Seminar, Wellness or Mathematics	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 8 SCH from the following		8
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	
<b>Additional Electives</b>		<b>30</b>
<b>Total SCHs</b>		<b>73</b>

**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 (may be applied from core) Calculus I	3
MATH 1703	Elementary Statistics I (may be applied from core)	3
<b>Chemistry I Requirement</b>		<b>4</b>
CHEM 1113 & CHEM 1111 or CHEM 1213/1211	General Chemistry I and General Chemistry Laboratory I Principles of Chemistry I	
<b>Chemistry II Requirement</b>		<b>4</b>
CHEM 1123 & CHEM 1121 or CHEM 1223/1221	General Chemistry II and General Chemistry Laboratory II Principles of Chemistry II	
<b>Physics I Requirement</b>		<b>4</b>
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**

<b>First Year</b>		<b>TCCN</b>	<b>SCHs</b>
<b>Fall</b>			
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	College Algebra	MATH 1314	3
UNIV 1231	Learning Frameworks: First-Year Seminar	EDUC 1100, EDUC 1200, EDUC 1300	1
<b>SCHs</b>			<b>14</b>
<b>Spring</b>		<b>TCCN</b>	
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 Elective	Earth Science: Global Perspectives	GEOL 1401	3 2
<b>SCHs</b>			<b>15</b>
<b>Second Year</b>			
<b>Fall</b>		<b>TCCN</b>	
BIOL 2113 & BIOL 2111	Plant Biology and Plant Biology Laboratory	BIOL 1411 & BIOL 1111	4
CHEM 1113 & CHEM 1111	General Chemistry I and General Chemistry Laboratory I	CHEM 1311 & CHEM 1111	4
POLS 2013	U.S. National Government Language, Philosophy, & Culture Core	GOVT 2305	3 3
Elective			2
<b>SCHs</b>			<b>16</b>
<b>Spring</b>		<b>TCCN</b>	
BIOL 4223 & BIOL 4221	Ecology and Ecology Laboratory		4
CHEM 1123 & CHEM 1121	General Chemistry II and General Chemistry Laboratory II	CHEM 1312 & CHEM 1112	4
POLS 2023	Texas Government Creative Arts Core	GOVT 2306	3 3
<b>SCHs</b>			<b>14</b>
<b>Third Year</b>			
<b>Fall</b>		<b>TCCN</b>	
CSCI 2003	Software Systems Design and Tools		3
HIST 1013	History of the United States, 1492-1865	HIST 1301	3
SCI 3013	Community Conversation in Sustainability		3
Minor Elective			3
Elective			3
<b>SCHs</b>			<b>15</b>

<b>Spring</b>		<b>TCCN</b>	
BIOL 4293	Scientific Communication		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
	General or Minor Elective		3
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	<b>SCHs</b>		<b>15</b>
<b>Fourth Year</b>			
<b>Fall</b>		<b>TCCN</b>	
PHYS 1133	Principles of Physics I	PHYS 1301	4
& PHYS 1131	and Principles of Physics Laboratory I	& PHYS 1101	
POLS 4813	Seminar in Public Policy		3
SCI 3113	GEN PHYS SCI		3
	Upper-level General or Minor Electives		6
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	<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		3
	Upper-level General or Minor Elective		3
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	<b>SCHs</b>		<b>15</b>
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	<b>Total SCHs:</b>		<b>120</b>