

# BACHELOR OF SCIENCE IN ENVIRONMENTAL CHEMISTRY

**Web Site:** <https://twu.edu/chemistry-biochemistry/undergraduate-programs/>

Environmental Chemistry is a study of the roles of chemical species in natural places such as water, air, and soil; the effects of human and biological activities on these roles; and the effects these roles have on human and biological activities.

## Marketable Skills

Defined by the Texas Higher Education Coordinating Board's 60x30 Strategic Plan (<https://reportcenter.highered.texas.gov/agency-publication/miscellaneous/theccb-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."

- effectively work and communicate with diverse team members.
- correctly write laboratory reports and papers coupled with presenting their work to their peers, at conferences, or to the general public.
- exhibit valuable verbal and written communication skills.
- demonstrate social and personal responsibility with a focus on civic engagement and with laboratory safety as the main priority.
- evidence excellent problem-solving and critical thinking skills related to chemistry to address other issues and solve other problems.

## 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:** 46 SCH

**Program Code:** ENVCHEMISTRY.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
CHEM 1001	Horizons of Chemistry and Biochemistry I: Career Possibilities	1
CHEM 1101	Horizons of Chemistry and Biochemistry II: Current Applications	1
BIOL 1113 & BIOL 1111	Principles of Biology I and Principles of Biology I Laboratory	4
CHEM 1213 & CHEM 1211	Principles of Chemistry I and Principles of Chemistry Laboratory I	4
CHEM 1223 & CHEM 1221	Principles of Chemistry II and Principles of Chemistry Laboratory II	4
BIOL 1123 & BIOL 1121	Principles of Biology II and Principles of Biology II Laboratory	4
CHEM 2213 & CHEM 2211	Organic Chemistry I and Organic Chemistry Laboratory I	4
CHEM 3223 & CHEM 3221	Organic Chemistry II and Organic Chemistry Laboratory II	4
CHEM 3313	Physical Chemistry for the Life Sciences	3
CHEM 3333 & CHEM 3331	Quantitative Chemical Analysis and Quantitative Chemical Analysis Laboratory	4
CHEM 3633 & CHEM 3632	Biochemistry I and Biochemistry I Laboratory	5
CHEM 3713 & CHEM 3711	Environmental Chemistry I and Environmental Chemistry Laboratory I	4
CHEM 4001	Research Presentations in Chemistry and Biochemistry	1
CHEM 4723	Environmental Chemistry II	3
<b>Total SCHs</b>	<b>46</b>	

### Departmental Requirements

Code	Title	SCHs
MATH 2014	Calculus I	4
MATH 2024	Calculus II	4
PHYS 2153 & PHYS 2151	General Physics I and General Physics Laboratory I	4
PHYS 2163 & PHYS 2161	General Physics II and General Physics Laboratory II	4
<b>Total SCHs</b>	<b>16</b>	

### Electives

Code	Title	SCHs
Choose 16 SCH of coursework not already taken.		16
CHEM 3413 & CHEM 3411	Physical Chemistry I and Physical Chemistry Laboratory I	
CHEM 3423 & CHEM 3421	Physical Chemistry II and Physical Chemistry Laboratory II	
CHEM 3643	Biochemistry II	
CHEM 4513 & CHEM 4511	Inorganic Chemistry and Inorganic Chemistry Laboratory	

CHEM 4983	Undergraduate Research		
CHEM 4991	Senior Thesis		
SCI 3013	Community Conversation in Sustainability		
SCI 3033	Water in a Changing Environment		
SCI 3133	Climate Change: A Human Perspective		
<b>Total SCHs</b>			<b>16</b>

## Recommended Plan of Study

### First Year

<b>Fall</b>		<b>TCCN</b>	<b>SCHs</b>
CHEM 1001	Horizons of Chemistry and Biochemistry I: Career Possibilities		1
CHEM 1213 & CHEM 1211	Principles of Chemistry I and Principles of Chemistry Laboratory I		4
MATH 2014	Calculus I	MATH 2413	4
UNIV 1231	Learning Frameworks: First-Year Seminar	EDUC 1100, EDUC 1200, EDUC 1300	1
Core			3
CAO Course			3
	<b>SCHs</b>		<b>16</b>

### Spring

		<b>TCCN</b>	
CHEM 1101	Horizons of Chemistry and Biochemistry II: Current Applications		1
CHEM 1223 & CHEM 1221	Principles of Chemistry II and Principles of Chemistry Laboratory II		4
MATH 2024	Calculus II	MATH 2414	4
Core			3
CAO Course			3
	<b>SCHs</b>		<b>15</b>

### Second Year

<b>Fall</b>		<b>TCCN</b>	
BIOL 1113 & BIOL 1111	Principles of Biology I and Principles of Biology I Laboratory	BIOL 1406 & BIOL 1106	4
CHEM 2213 & CHEM 2211	Organic Chemistry I and Organic Chemistry Laboratory I	CHEM 2323 & CHEM 2123	4
PHYS 2153 & PHYS 2151	General Physics I and General Physics Laboratory I	PHYS 2325 & PHYS 2125	4
Core			3
	<b>SCHs</b>		<b>15</b>

### Spring

		<b>TCCN</b>	
BIOL 1123 & BIOL 1121	Principles of Biology II and Principles of Biology II Laboratory	BIOL 1407 & BIOL 1107	4
CHEM 3223 & CHEM 3221	Organic Chemistry II and Organic Chemistry Laboratory II		4
PHYS 2163 & PHYS 2161	General Physics II and General Physics Laboratory II	PHYS 2326 & PHYS 2126	4
Core			3
	<b>SCHs</b>		<b>15</b>

### Third Year

<b>Fall</b>		<b>TCCN</b>	
CHEM 3633	Biochemistry I & CHEM 3632 and Biochemistry I Laboratory		5
Required Elective			4
Core			3
Core			3
	<b>SCHs</b>		<b>15</b>

### Spring

		<b>TCCN</b>	
CHEM 3313	Physical Chemistry for the Life Sciences		3
CHEM 3333 & CHEM 3331	Quantitative Chemical Analysis and Quantitative Chemical Analysis Laboratory		4
CHEM 3713 & CHEM 3711	Environmental Chemistry I and Environmental Chemistry Laboratory I		4
Core			3
Core			3
	<b>SCHs</b>		<b>17</b>

### Fourth Year

<b>Fall</b>		<b>TCCN</b>	
Required CHEM Elective			3
Required Elective			3
Core			3
Elective			4
	<b>SCHs</b>		<b>13</b>

### Spring

		<b>TCCN</b>	
CHEM 4001	Research Presentations in Chemistry and Biochemistry		1
CHEM 4723	Environmental Chemistry II		3
Core			3
Elective			3
Elective			4
	<b>SCHs</b>		<b>14</b>

### Total SCHs:

**120**