

## Institutional Effectiveness

2020-2021

**Program:** Chemistry BS

**College and Department:** College of Arts & Sciences – Department of Chemistry

**Contact:** Jeff Boles

**Mission:** The primary mission of the Department of Chemistry is the chemical education of students at ~~Texas State Technological University~~ ~~and~~ ~~the~~ ~~goals~~ ~~is~~ ~~to~~ ~~provide~~ ~~the~~ ~~facilities,~~ ~~opportunity,~~ ~~and~~ ~~inducement~~ ~~to~~ ~~conduct,~~ ~~evaluate,~~ ~~and~~ ~~report~~ ~~on~~ ~~original~~ ~~research~~ ~~under~~ ~~the~~ ~~supervision~~ ~~of~~ ~~a~~ ~~faculty~~ ~~mentor~~ ~~and~~ ~~thereby~~ ~~add~~ ~~to~~ ~~the~~ ~~knowledge~~ ~~of~~ ~~mankind~~ ~~while~~ ~~participating~~ ~~in~~ ~~team-based~~ ~~approaches~~ ~~to~~ ~~learning~~ ~~that~~ ~~are~~ ~~likely~~ ~~to~~ ~~be~~ ~~encountered~~ ~~in~~ ~~a~~ ~~graduate's~~ ~~career.~~

*Undergraduate Program: BS Chemistry Program Description*

Concentrations (abbreviations):

CHMA – ACS certified Chemistry Major

CHMP – Pure Chemistry Major

CHMN – Applied Chemistry Major

CHMN – Biochemistry Major

Catalog Program Listings (revised in 2008 to provide enhanced student learning outcomes)

CHMA: The A.C.S. concentration is intended to prepare students for graduate school or to pursue chemistry as a profession in industry.

that addressed student need and took advantage of program strength, we chose to act on this request immediately. TTU Chemistry was one of the first departments to create new curricula meeting certification requirements in the country. With the involvement of TTU Chemistry Alumni (and some Chemistry Advisory Board Members), we developed the following Options within Applied Chemistry, each of which is certifiable by the American Chemical Society if certain required course substitutions are made in the student's program of study.



b. Senior chemistry majors in all three concentrations

*SLO 1: Demonstrate knowledge and critical thinking*

1. ETS Chemistry Field Exam

Student Performance on the national ETS Chemistry Field Exam in the four branches of chemistry (referred to as subscores 1 through 4) for Outcome 1. Student performance, Assessment Indicator #2 (Critical Thinking and Reasoning Ability) for Outcome 2. Senior performance on the ETS Chemistry Field Exam -Assessment indicator #1 (Biochemistry knowledge assessment) for Learning Outcome 3.

- This mastery level by TTU students on the ETS Field Exam, which should exceed the national average for CHMA majors as demonstrated on the ETS Chemistry Field Exam, is discussed at faculty meetings (cohort = CHMP, CHMB, CHMN).
- This mastery level by TTU students for critical thinking and reasoning ability on the ETS Field Exam that should meet or exceed the national average for chemistry

## 2. ACS National Meetings Program

2019-2020	\$443,651	\$234K
2020-2021	\$434,356	\$246K
Total Last 15 years	\$ 7,572,776	

*SLO 2: Successful graduates*

Academic Year	Students Active in Undergrad Research	Research Presented at the National ACS Meeting
2020-2021	71	7 (Meeting Held Online – COVID)
2019-2020	74	- Meeting Cancelled - COVID
2018-2019	71	22 (Orlando, FL)
2017-2018	74	19 (New Orleans, LA)
2016-2017	72	15 (San Francisco, CA)
2015-2016	77	26 (San Diego, CA)
2014-2015	77	26 (Denver, CO)
2013-2014	72	22 (Dallas, TX)

*SLO 4: Knowledge of general chemistry*

Beginning Fall 2017, we initiated an exam



increased sharply. This may be the reason the average on the final exam was lower, as well. Students are now attending class unless ill or in quarantine. This is a significant modification that essentially provides an attendance-

## Appendix 1: Curriculum Map

### Chemistry BS

Course	Title	Student Outcomes				
		SLO1		SLO2	SLO3	SLO4
		Factual knowledge	Critical thinking	Research	Teamwork	Knowledge of Gen Chem
1110	General Chemistry I	X	X		X	X
1120	General Chemistry II	X	X		X	X
1500	1st-Yr Interactions/Advisement	X	X	X	X	

2010

4320	Spectro Ident-Organic Compounds	X	X	X	X	
4410	Forensic Chemistry	X	X	X	X	
4520	Instrumental Analysis	X	X	X	X	
4610	General Biochemistry I	X	X			
4620	General Biochemistry II	X	X			
4650	General Biochemistry Lab	X	X		X	
4710	Environmental Chemistry	X	X			
4720	Advanced Environmental Chemistry	X	X			
4910	Chemistry Seminar	X	X	X	X	
4970	Special Topics	X	X	X	X	
4991	Undergraduate Research	X	X	X	X	
4992	Undergraduate Research	X	X	X	X	
4993	Undergraduate Research	X	X	X	X	

## Appendix 2: Graduating Senior Survey

TENNESSEE TECHNOLOGICAL UNIVERSITY

DEPARTMENT OF CHEMISTRY

GRADUATING SENIOR SURVEY

Major: \_\_\_\_\_ Emphasis: \_\_\_\_\_ Advisor: \_\_\_\_\_

Years at TTU:

Years in the Department:

Original major at TTU:

**Please take time to share your thoughts and perceptions of the Department in order to foster the improvement of its program and faculty.**

List or discuss the strengths of the department, faculty, and degree program.

List of discuss the weakness of the department, faculty, and degree program.

Any suggestions you may have to improve the department, its faculty, and programs