

# CHEMISTRY MAJOR

The purpose of the Chemistry major is to prepare students in professional careers in industrial chemistry, medicine, forensic science, teaching, and graduate studies.

We believe that God is revealed in both His Word and His world and a study of both is necessary to develop a healthy, biblical worldview.

We teach students to study the natural world in order to critically evaluate the results of their observations about the world, gain a deeper understanding of God as he is revealed in the world, develop a sense of responsibility to the world, and appreciate aesthetically the wonders of the world.

## Program Outcomes:

Students completing a Bachelor of Arts degree in *Chemistry* will be able to:

- compare favorably in content knowledge with those students completing similar programs
- communicate scientific concepts orally
- communicate scientific concepts in written form
- conduct independent research by collecting and analyzing data and presenting the results in a formal presentation
- analyze bioethical issues from a Christian worldview

## Chemistry Major

All Chemistry Majors must take the Chemistry Core. In addition, they must choose at least one area of emphasis: Professional Chemistry, Pre-Medical, or Forensic Science.

Code	Title	Hours
<b>Chemistry Core</b>		
Required Courses for General Education		
CH 111	General Chemistry I	4
MA 121	Calculus and Analytic Geometry I	4
Required Chemistry Courses		
CH 112	General Chemistry II	4
CH 211	Organic Chemistry I	4
CH 212	Organic Chemistry II	4
CH 312	Instrumental Analysis	4
CH 320	Biochemistry	3
CH 340	Laboratory in Chemistry	1
CH 410	Chemistry Seminar	1
Required Physics Supporting Courses		
PHY 111	General Physics I	4
PHY 112	General Physics II	4
Required Bioethics Supporting Courses (Choose One)		
BE 474X	Introduction to Bioethics	
BE 476X	Undergraduate Bioethics Institute	
Required Professional Experience (Choose One)		
BIO 306	Scientific Applications Professional Experience	1-4
BIO 406	Advanced Scientific Applications Professional Experience	
BIO 470	Undergraduate Research	

CH 306	Scientific Applications Professional Experience	
CH 406	Advanced Scientific Applications Professional Experience	
CH 442	Undergraduate Research <sup>1</sup>	
Total Hours		41-44

## Professional Chemistry Emphasis

Requirements for the Chemistry major with Professional Chemistry emphasis total a minimum of 53 hours. This includes 36 hours of required Chemistry courses, 12 hours in supporting courses and 5-6 hours of Bioethics courses. An additional 7 hours fulfill general education requirements.

Code	Title	Hours
Required Chemistry Courses		
CH 311	Quantitative Analysis	4
CH 411	Inorganic Chemistry	3
CH 412	Physical Chemistry of Biological Systems	4
CH 442	Undergraduate Research <sup>1</sup>	4
Required Mathematics Supporting Courses		
MA 122	Calculus and Analytic Geometry II	4
Required Bioethics Supporting Courses (Choose One)		
BE 475X	Topics in Bioethics:	2-3
BE 477X	Undergraduate National Conference	
BE 5200	Research Ethics	
Total Hours		21-22

## Pre-Medical Emphasis

Students having a Chemistry major with a Pre-Medical emphasis should be aware of unique opportunities for conferences, internships, and experiences associated with the Center for Bioethics and Human Dignity (<https://www.cbhd.org>) on Trinity's campus, as well as the MA in Bioethics Dual Degree (<http://catalog.tiu.edu/trinity-college/academic-life/majors-minors-department/biology-chemistry/chemistry-major/graduate/academic-life/masters-programs/mabe/#bamaainbioethicsdualdegreertext>) through Trinity Graduate School. Requirements for the Chemistry major with Pre-Medical emphasis total a minimum of 59-60 hours. This includes 29 hours of required Chemistry courses, 27-28 hours in supporting courses and 3 hours of Bioethics courses. An additional 11 hours fulfill general education requirements.

Code	Title	Hours
Required Courses for General Education		
BIO 111	General Biology	4
Required Chemistry Courses		
CH 311	Quantitative Analysis	4
CH 412	Physical Chemistry of Biological Systems	4
Required Biology Supporting Courses		
BIO 340	Human Anatomy and Physiology I	4
BIO 341	Human Anatomy and Physiology II	4
Choose Three:		11-12
BIO 310	Microbiology	
BIO 315	Genetics	
BIO 320	Immunology	
BIO 420	Cell and Molecular Biology	

BIO 430	Developmental Biology	
Any of the above biology courses are strongly recommended as electives.		
Electives (highly Recommended additional courses)		
PSY 140	Introduction to Psychology	3
Choose One:		3-4
MA 280X	Introductory Statistics	
MA 285X	Statistics	
Choose One:		3
PSY 335	Child Development	
PSY 337	Psychology of Adolescence	
PSY 339	Adult Development	
Total Hours		40-42

### Forensic Science Emphasis

Requirements for the Chemistry major with Forensic Science emphasis total a minimum of 61-62 hours. This includes 28 hours of required Chemistry courses, 30-31 hours in supporting courses and 3 hours of Bioethics courses. An additional 8 hours fulfill general education requirements.

Code	Title	Hours
Required Chemistry Courses		
CH 105X	Introduction to Forensic Science	3
CH 412	Physical Chemistry of Biological Systems	4
Required Biology Supporting Courses		
BIO 340	Human Anatomy and Physiology I	4
BIO 341	Human Anatomy and Physiology II	4
BIO 315	Genetics	4
BIO 445	Pathophysiology	3
Choose two:		7-8
BIO 310	Microbiology	
BIO 420	Cell and Molecular Biology	
BIO 320	Immunology	
Electives (highly recommended additional courses):		
HS 6401	Pharmacology and Ergogenic Aids	3
BIO 5340	Gross Anatomy	4
Total Hours		36-37

<sup>1</sup> CH 442 also fulfills the professional experience requirement for graduation.