Chemistry Major

(BSChem degree)

University of Michigan - Department of Chemistry

Effective: Fall 2019

Chemistry is a dynamic discipline that stretches the imagination. At the same time Chemistry remains practical and down to earth. Chemists analyze, synthesize, quantitate, and design materials. They also relish creating models and theories that can rationalize what happens in the laboratory. Chemists enjoy discussing experiments and ideas with each other as well as with physicists, biologists, computer scientists, and experts in electronics and materials science. Each day in their experiments chemists use sophisticated instrumentation such as lasers, mass spectrometers, and nuclear magnetic resonance spectrometers. In other words, Chemistry interfaces with a myriad of other disciplines and fields.

The *B.S. Chemistry* degree offers a deep, rigorous experience that will prepare you for the top graduate programs or a career in chemical industry and related fields.

Prerequisites:

- AP credit for Physics (125/127 or 139) & (126/128 or 239) will fulfill the Physics requirement.
- AP credit for Math (120 & 121) will fulfill the Math requirement.

Course #	Course Description	Term Completed	Term Typically Offered	Credits
CHEM 210	Structure and Reactivity I		*F, W, Sp*	4
CHEM 211	Investigations in Chemistry		*F, W, Sp*	1
CHEM 215	Structure and Reactivity II		*F, W, Sp*	3
CHEM 216	Structure and Reactivity II: Laboratory		*F, W, Sp*	2
CHEM 241	Introduction to Chemical Analysis		*F, W*	2
CHEM 242	Introduction to Chemical Analysis Laboratory		*F, W*	2
CHEM 260	Chemical Principles		*F, W, Sp*	3
OR				
CHEM 370	Physical and Chemical Principles Behind Biology and Medicine		*F*	3
MATH 115	Calculus I		*F, W, Sp, Su*	4
MATH 116	Calculus II		*F, W, Sp, Su*	4
One of the following; CHEM 262 or [MATH 215 + 216 or 217]:				
CHEM 262	Mathematical Methods for Chemists		*F, W*	4
MATH 215 and MATH 216	Calculus III and Introduction to Differential Equations		*F, W, Sp, Su*	4
			F, W, Sp, Su	4
MATH 215 and MATH 217	Calculus III and Linear Algebra		*F, W, Sp, Su*	4
			F, W, Sp	4

Prerequisite Courses: continue from page 1.		**Term Completed**	**Term Typically Offered**	**Credits**
One of the following groups; 135/136 or 140/141:				
PHYS 135/136	Physics for the Life Sciences I/Laboratory I		*F, W, Sp*	4/1
OR				
PHYS 140/141	General Physics I/Elementary Laboratory I		*F, W, Sp*	4/1
One of the following groups; 235/236 or 240/241:				
PHYS 235/236	Physics for the Life Sciences II/ Laboratory II		*F, W, Sp*	4/1
OR				
PHYS 240/241	General Physics II/ Elementary Laboratory II		*F, W, Sp*	4/1

The Chemistry Program must include the following: Core courses

Course #	**Course Description**	**Term Completed**	**Term Typically Offered**	**Credits**
One of the following; 302 or 303:				
CHEM 302	Inorganic Chemistry		*W*	3
OR				
CHEM 303	Intro Bioinorganic Chemistry: the Role of Metals in Life		*F,W*	3
All of the below courses:				
CHEM 399	Undergraduate Research- Taken over 2 semesters		*F, W*	4
CHEM 402	Intermediate Inorganic Chemistry		*F*	3
CHEM 447	Physical Methods of Analysis		*W*	3
CHEM 461	Physical Chemistry I		*F*	3
CHEM 462	Computational Chemistry Laboratory		*F*	1
CHEM 463	Physical Chemistry II		*W*	3
CHEM 482	Synthesis and Characterization- *ULWR*		*F*	3
CHEM 483	Physical and Instrumental Chemistry		*W*	3
	Advanced Lecture- to be selected with advisor			

Chemistry honors:

Students may obtain honors in Chemistry by successfully completing all courses required for the Chemistry major with an overall GPA of 3.4. In addition, students obtaining Honors must write a thesis based on their undergraduate research. Students must register for one credit of CHEM 499 in the term in which they plan to submit their thesis.

Chemistry GPA requirement:

A student must earn a cumulative grade point average (GPA) of at least 2.0 in all courses required for the Chemistry major including prerequisites. Transfer courses are not calculated into the GPA.

ACS certified degree:

To receive an ACS certified degree you must complete CHEM 245/246/247 OR CHEM 303 OR CHEM 351.