Chemical Science

University of Michigan - Department of Chemistry

Effective 9/2015

The B.S. Major in Chemical Science degree exposes students to all sub-disciplines in Chemistry, but provides more flexibility in course selection than the BS Chemistry degree. Undergraduate research is an option, but not a requirement for this degree. The BS Major in Chemical Science is directed towards students who have interdisciplinary interests and are not planning to either attend a traditional graduate program in chemistry or to find immediate employment in the chemical industry. Instead, this degree is geared towards students who plan to attend graduate school in an interdisciplinary field where chemical knowledge will be beneficial, and towards students that are interested in chemistry but plan to pursue post-graduate degrees in the Health Sciences.

Prerequisites:

Course #	Course Description	Term Completed	Grade	Credits
CHEM 210	Structure and Reactivity I			4
CHEM 211	Investigations in Chemistry			1
CHEM 215	Structure and Reactivity II			3
CHEM 216	Structure and Reactivity II: Laboratory			2
CHEM 241	Introduction to Chemical Analysis			2
CHEM 242	Introduction to Chemical Analysis Laboratory			2
CHEM 260	Chemical Principles			3
MATH 115	Calculus I			4
MATH 116	Calculus II			4
One of the following; CHEM 262 or [MATH 215 or 216 or 217]:				
CHEM 262	Mathematical Methods for Chemists			4
MATH 215 and MATH 216	Calculus III and Introduction to Differential Equations			4 4
MATH 215 and MATH 217	Calculus III and Linear Algebra			4 4
One of the following groups; PHYS 135/136 or 140/141:				
PHYS 135/136 OR PHYS 140/141	Physics for the Life Sciences I/Laboratory I			4/1
	General Physics I/Elementary Laboratory I			4/1

One of the following groups; PHYS 235/236 or 240/241:				
PHYS 235/236	Physics for the Life Sciences II/ Laboratory II			4/1
OR				
PHYS 240/241	General Physics II/ Elementary Laboratory II			4/1

Core courses

Course #	Course Description	Term Completed	Grade	Credits
One of the following; CHEM 302 or 303:				
CHEM 302	Inorganic Chemistry			3
OR				
CHEM 303	Introductory Bioinorganic Chemistry: the Role of Metals in Life			3
Two of the following; CHEM 351, 402, 419, 420				
CHEM 351	Fundamentals of Biochemistry			4
CHEM 402	Intermediate Inorganic Chemistry			3
CHEM 419	Intermediate Physical Organic Chemistry			3
CHEM 420	Intermediate Organic Chemistry			3
Two of the following; CHEM 447, 461 + 462, [453 + 462 or 463 + 462] ‡				
CHEM 447	Physical Methods of Analysis			3
CHEM 461 and	Physical Chemistry I and			3
CHEM 462	Computational Chemistry Laboratory			1
CHEM 453 and	Biophysical Chemistry I: Thermodynamics and Kinetics, and			3
CHEM 462	Computational Chemistry Laboratory			1
OR				
CHEM 463 and	Physical Chemistry II, and			3
CHEM 462	Computational Chemistry Laboratory			1
Two different courses from the list below to total at least 5 credit hours:*				
CHEM 399	Undergraduate Research- taken over 2 semesters			2-3
CHEM 352	Introduction to Biochemical Research Techniques			2
CHEM 436	Polymer Synthesis and Characterization			3
CHEM 482	Synthesis and Characterization			3
CHEM 483	Advanced Methods in Physical Analysis			3
Additional 3-credit upper-level elective- to be selected with advisor				
				3

‡ A student will only take 462 once if both 461 and 463 or 453 are elected.

* If a student chooses Chem 399 to fulfill this requirement, the second course must be in a different field of chemistry than the research area for the Chem 399 project.

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.