

Bachelor of Science With a Major in Chemistry

The B.S. degree is a more rigorous degree, than the B.A. degree, that requires considerably more teaching laboratory hours and undergraduate research. The B.S. degree is intended for students who desire a complete and well-rounded chemistry background for graduate work in chemistry or the medical field. The B.S. degree is also well-suited for students desiring employment immediately after graduation. The B.S. degree requires a minimum of 44 hours in the department and eight hours of physics and nine hours of calculus. Three credit hours of undergraduate research are also required, although most B.S. majors conduct research for more hours than required. Degree requirements, including a suggested four-year plan, are summarized below. The B.S. degree is certified by the American Chemical Society for professional training in chemistry.

COURSE REQUIREMENTS

Chemistry (minimum of 44 hours)

Core Courses:

CHEM 1303, 1304, 1113, 1114 General Chemistry

CHEM 3371, 3372, 3117, 3118 Organic Chemistry

CHEM 3351 Quantitative Analysis

CHEM 5310 Biological Chemistry: Macromolecular Structure and Function

CHEM 5383, 5384 Physical Chemistry

CHEM 5486 Instrumental Analysis

CHEM 5185 Laboratory Methods in Physical Chemistry

CHEM 5188 Advanced Physical Chemistry Laboratory

CHEM 5392 Advanced Inorganic Chemistry

CHEM 5192 Inorganic Synthesis

CHEM 4397 Undergraduate Research

Electives (choose at least 3 hours from the following)¹:

CHEM 4313 Modern Physical Organic Chemistry

CHEM 5306 Introduction to Computational Chemistry

CHEM 5308 Special Topics

CHEM 5311 Biological Chemistry: Metabolism

CHEM 5312 Physical Biochemistry

CHEM 5317 Introduction to Molecular Modeling and Computer Assisted Drug Design

CHEM 5321 Understanding Chemistry

CHEM 5322 Introduction to Nanotechnology

CHEM 5333 Polymer Chemistry

CHEM 5344 Physical Chemistry of Proteins

CHEM 5393 Advanced Organic Chemistry

CHEM 5396 Advanced Physical Chemistry

CHEM 5398 Medicinal Chemistry

Mathematics (9 or 12 hours):

MATH 1337, 1338, 3302 Calculus; MATH 3313 Ordinary Differential Equations (recommended)

Physics (8 hours):

PHYS 1303, 1304 (or 1307, 1308), 1105, 1106 General Physics

¹Dual-listed courses, such as CHEM 5310/BIOL 5310, count only for one major or minor; they cannot be double-counted.

Additional Optional Courses (recommended for students who plan to attend graduate school, but not required for the degree): MATH 3315 Introduction to Scientific Computing. (Students interested in physical chemistry might want to complete a minor in mathematics by taking MATH 3313, 3315, and 3353.)

You also need to satisfy University Curriculum (UC) requirements.

Suggested four-year plan for a B.S. in Chemistry (University Curriculum courses are not included in this plan)

1st year, Fall	1st year, Spring
CHEM 1303 General Chemistry I lecture CHEM 1113 General Chemistry I laboratory MATH 1337 Calculus I	CHEM 1304 General Chemistry II lecture CHEM 1114 General Chemistry II laboratory MATH 1338 Calculus II
2nd year, Fall	2nd year, Spring
CHEM 3371 Organic Chemistry I lecture CHEM 3117 Organic Chemistry I lab PHYS 1303 or 1307 General Physics I lecture PHYS 1105 Physics I laboratory MATH 3302 Calculus III	CHEM 3372 Organic Chemistry II lecture CHEM 3118 Organic Chemistry II lab PHYS 1304 or 1308 General Physics II lecture PHYS 1106 Physics II laboratory MATH 3313 Differential Equations (recommended)
3rd year, Fall	3rd year, Spring
CHEM 5383 Physical Chemistry I (premed: 4th year) CHEM 3351 Quantitative Analysis CHEM 5192 Inorganic Synthesis laboratory	CHEM 5384 Physical Chemistry II (premed: 4th year) CHEM 5185, 5188 Physical Chemistry labs CHEM 5486 Instrumental Analysis (or 4th year)
4th year, Fall	4th year, Spring
CHEM 5392 Advanced Inorganic Chemistry CHEM 5310 Biochemistry (premed: 3rd year)	CHEM 4397 Undergraduate Research (or 3rd year) CHEM 4313 or 53XX Advanced chemistry elective

Departmental Distinction

A chemistry major pursuing a B.S. degree may elect to graduate with departmental distinction. The student must apply to the department for this designation during the junior year, after at least 22 hours of chemistry have been completed with a minimum GPA of 3.500 in those courses. The student will enroll in CHEM 4397 and undertake an independent research project under the supervision of a departmental faculty member. During the senior year, a senior thesis will be written and presented to the department. Upon completion of all degree requirements, approval of the departmental faculty at the completion of these requirements, and provided the student maintains a minimum 3.500 GPA in all chemistry courses, the student will graduate with departmental distinction in chemistry.