

CHEMISTRY, BACHELOR OF SCIENCE - CHEM

Program in Chemistry

The Bachelor of Science degree in Chemistry has a built-in flexibility that is designed to accommodate the goals of each student while maintaining a rigorous approach to chemistry. All students take a core set of foundational courses, and then choose in-depth courses to meet their educational needs. This includes students who wish to pursue a health profession with a focus in biochemistry. We also have students who pursue the Five-Year Dual-Degree Engineering Program with the University of Notre Dame in chemical or environmental engineering. Students who wish to pursue graduate school in chemistry should consider the American Chemical Society certification (see below). There is the opportunity for students who wish to become high school teachers to satisfy the certification of the National Council for Accreditation of Teacher Education. For those planning on entering careers in the health professions, individual counseling is provided to insure that their programs will provide the depth and breadth that is expected in medical and other professional schools in the health sciences.

American Chemical Society Certification

Saint Mary's College is an American Chemical Society (ACS) approved school in chemistry. For those students interested in a more intensive chemistry program, an ACS-certified curriculum is available. Interested students should contact the department chair for information.

Major Requirements (56 hours)

Code	Title	Credits
Required		
CHEM 121 & 121L	Principles of Chemistry I and Principles of Chemistry I Laboratory	4
CHEM 122 & 122L	Principles of Chemistry II and Principles of Chemistry II Laboratory	4
CHEM 221 & 221L	Organic Chemistry I and Organic Chemistry I Laboratory	4
CHEM 222 & 222L	Organic Chemistry II and Organic Chemistry II Laboratory	4
CHEM 311 or CHEM 312	Thermodynamics Quantum Chemistry	3
CHEM 324	Biochemistry	3
CHEM 332	Analytical Chemistry	3
CHEM 342	Bio-Inorganic Chemistry	3
CHEM 361	Advanced Laboratory I	4
CHEM 362	Advanced Laboratory II	4
CHEM 495	Senior Seminar	1
Select one of the following (not taken above):		3
CHEM 311	Thermodynamics	
CHEM 312	Quantum Chemistry	
CHEM 424	Advanced Biochemistry	
CHEM 431	Advanced Inorganic Chemistry	
Required Supporting Courses		
MATH 131	Calculus I (or equivalent)	4
MATH 132	Calculus II for STEM majors (or equivalent)	4

PHYS 121 & 121L	General Physics I: Mechanics and Waves and General Physics I Lab	4
PHYS 122 & 122L	General Physics II: Temperature, Electricity, and Light and General Physics II Laboratory	4

Total Credits 56

Advanced Writing Proficiency

Each student writes a formal paper consisting of a research topic of her choosing. The formal paper is an in-depth presentation of chemistry and reflects a command of the subject appropriate to a senior chemistry major. Students will work closely with a department faculty member to meet this requirement. It is due by the end of the fall semester of the student's senior year.

Senior Comprehensive

The Senior Comprehensive consists of a poster presentation at the Physical Sciences Poster Session and a 15-minute oral presentation at the Physical Sciences Symposium. The public presentations are on a chemistry topic of the student's choosing and may or may not be related to the research topic of the formal paper. Both presentations are given in the spring semester of the senior year and include a question and answer period. The goal for students is to demonstrate their ability to orally communicate data/results to a scientific audience in formats that they are most likely to experience as professional scientists.

Student Learning Outcomes

Undergraduate students upon graduation with a B.S. degree in Chemistry:

- Understand and apply the fundamental principles of current chemical theories;
- Think critically to interpret experimental results;
- Demonstrate problem-solving skills, by using systematic reasoning in their approach to problems, and;
- Effectively communicate chemical ideas to different types of audiences (scientific and non-scientific).