

# Chemistry

Program Description	Type	Degree
Chemistry, B.S. ( <a href="http://coursecat.isu.edu/undergraduate/scienceengineering/chemistry/bs-chemistry/">http://coursecat.isu.edu/undergraduate/scienceengineering/chemistry/bs-chemistry/</a> )	Degree	B.S.
Chemistry, B.A. ( <a href="http://coursecat.isu.edu/undergraduate/scienceengineering/chemistry/ba-chemistry/">http://coursecat.isu.edu/undergraduate/scienceengineering/chemistry/ba-chemistry/</a> )	Degree	B.A.
Biochemistry, B.S. ( <a href="http://coursecat.isu.edu/undergraduate/scienceengineering/chemistry/bs-biochemistry/">http://coursecat.isu.edu/undergraduate/scienceengineering/chemistry/bs-biochemistry/</a> )	Degree	B.S.
Chemistry, Minor ( <a href="http://coursecat.isu.edu/undergraduate/scienceengineering/chemistry/minor-chemistry/">http://coursecat.isu.edu/undergraduate/scienceengineering/chemistry/minor-chemistry/</a> )	Minor	
Accelerated Chemistry, B.S./M.S. ( <a href="http://coursecat.isu.edu/undergraduate/scienceengineering/chemistry/accelerated-bs-ms-chemistry/">http://coursecat.isu.edu/undergraduate/scienceengineering/chemistry/accelerated-bs-ms-chemistry/</a> )	Degree	B.S./M.S.

## Objectives:

1. To gain a well-rounded knowledge of the basic fields of the discipline.
2. To develop an understanding of how chemists think, gather evidence, process data, and reach tentative conclusions.
3. To think critically about experimental observations and theories.
4. To develop effective oral and written communication skills.
5. To engage in problem solving.
6. To prepare for a career or profession after graduation in the field of chemistry either as an educator or in industry.
7. To be able to competitively pursue a health-related advanced professional degree.

Our chemistry courses will prepare students for industrial or government laboratory work or for graduate study in chemistry, biochemistry, or allied fields or serve as preparation for medical, pharmacy, optometry, physician assistant, or dental school.

The department offers five degree programs: four traditional degrees and a unique combined B.S./M.S. program. The Bachelor of Arts degree is designed for students who desire a flexible program so they can develop more interdisciplinary competence. This degree is ideal for those students endeavoring to work at the chemistry/biology/pharmaceutical chemistry interface. The Bachelor of Science degree places greater emphasis on comprehensive chemistry, leading to American Chemical Society (ACS) certification upon graduation. The Bachelor of Science degree in Biochemistry is a joint program with the Department of Biological Sciences. The combined B.S./M.S. program is designed to enable students to attain both a B.S. and an M.S. in a five year time frame. This program allows the student to receive the ACS-certified Bachelor of Science degree and the Master of Science degree at the end of the fifth year. Students may apply as sophomores for this program and can be admitted into the program at the beginning of their junior year. The department offers a Master of Science degree as well for individuals who already possess a Bachelor of Science in Chemistry.

Course work to be used as a prerequisite for a chemistry class must have been taken within the most recent 5 year period unless the student obtains permission

of the instructor and has a grade of C- or better. All credits applied to a chemistry degree or applied to chemistry courses used to partially satisfy Objective 5 must have been taken within the most recent 10 years unless it can be shown that the coursework taken earlier covers material that has not changed substantially during the intervening time, or that the student has been able to remain current in the topics covered in the course. Evidence that the older coursework is still appropriate must be approved by the department chairperson.

## Accelerated BS/MS Degree Program in Chemistry

The Department of Chemistry offers an accelerated BS/MS program for talented and motivated undergraduates in Chemistry and Biochemistry. Graduates will receive separate bachelor's and master's degrees on their transcripts. The BS degree can be in either Chemistry or Biochemistry, and the MS degree will be in Chemistry. This program allows a student to complete the traditional BS in 4 years, and while doing so also enroll in 5000-level classes that will count toward both undergraduate and graduate requirements. Together with summer research, these credits shorten the MS timeline to just one additional year, reducing the time and cost required to earn the MS degree.

## Admission Requirements

Information about admission into the accelerated program can be found in the undergraduate catalog (<http://coursecat.isu.edu/undergraduate/scienceengineering/chemistry/accelerated-bs-ms-chemistry/>), as can guidance regarding suggested preparatory courses that will satisfy prerequisites to facilitate timely progress through the advanced degree.

Before enrolling in graduate-level coursework, participants must also apply for formal admission into Idaho State University's Graduate School. Standard criteria that must be satisfied for admission are detailed by the Graduate School (<http://coursecat.isu.edu/graduate/graduateadmissions/>). Standardized tests such as the GRE are not required for students in the BS/MS program.

## General Requirements

Students in the accelerated program fulfill the same total credit requirements for the graduate degree as all other MS students. A key benefit of the accelerated framework is that graduate courses can count toward both degrees and shorten the degree timeline. In addition, the accelerated program is differentiated from traditional thesis and coursework MS degrees in Chemistry by a structured research project conducted principally during two summers. This element is intended to give students intensive research analogous to a thesis degree while retaining the structure and respecting the schedule limitations of undergraduate education.

To fulfill the research component of the degree, each student selects a committee and identifies a project during the first year after admission, which is typically their third year in university. They go on to conduct laboratory research during the summers, complete parts of a research paper each semester, and defend a final research paper prior to graduation with the MS degree.

Continuation in the accelerated program requires that the student maintain a minimum GPA of 3.0 from the date of admission, and make satisfactory progress as approved by their committee. Students failing to make adequate coursework or research progress will be asked to discontinue the program after completing the bachelor's degree. Students enrolled in the accelerated program may also freely elect to abandon the MS portion, and the bachelor's degree will be awarded as soon as the student has fulfilled all bachelor's degree requirements. A student wishing to apply their BS/MS progress towards a stand-alone MS degree (thesis

or non-thesis) must reapply to that program following the steps described in the Graduate Catalog (<http://coursecat.isu.edu/graduate/graduateadmissions/>).

### **Suggested Schedule**

The following schedule shows how a chemistry student might progress through the BS/MS program if they enter it having already completed CHEM 2211 (<http://coursecat.isu.edu/search/?P=CHEM%202211>), CHEM 2213 (<http://coursecat.isu.edu/search/?P=CHEM%202213>), CHEM 2232 (<http://coursecat.isu.edu/search/?P=CHEM%202232>), and CHEM 2234 (<http://coursecat.isu.edu/search/?P=CHEM%202234>). Each student is required to meet all course requirements for either the BS degree in chemistry (except independent problems CHEM 4481 (<http://coursecat.isu.edu/search/?P=CHEM%204481>) and CHEM 4482 (<http://coursecat.isu.edu/search/?P=CHEM%204482>), which are replaced by a total of 8 credits of CHEM 4485 (<http://coursecat.isu.edu/search/?P=CHEM%204485>)), or the BS in biochemistry. Each student is required to complete two credits of seminar (CHEM 6601 (<http://coursecat.isu.edu/search/?P=CHEM%206601>)), ten credits of MS research (CHEM 6635 (<http://coursecat.isu.edu/search/?P=CHEM%206635>)), two of the advanced chemistry courses (CHEM 6609 (<http://coursecat.isu.edu/search/?P=CHEM%206609>), CHEM 6630 (<http://coursecat.isu.edu/search/?P=CHEM%206630>), CHEM 6655 (<http://coursecat.isu.edu/search/?P=CHEM%206655>), and CHEM 6671 (<http://coursecat.isu.edu/search/?P=CHEM%206671>)) and six additional credits from among these or other approved 6600-level lecture courses. These twenty-four credits of 6600 level courses are taken during the second and third years of the program. Students must complete six additional credits of approved graduate-level coursework at the 5500 or 6600 level. Up to six credits of CHEM 4400/5500-level lecture or laboratory coursework taken at the 5500-level may be counted simultaneously toward both the Chemistry or Biochemistry BS degree and toward the Chemistry MS degree within the BS/MS program.

Faculty (<http://coursecat.isu.edu/undergraduate/scienceengineering/chemistry/faculty/>)

CHEM Courses (<http://coursecat.isu.edu/undergraduate/allcourses/chem/>)