Duluth Campus

Chemistry B.S.

Chemistry and Biochemistry

Swenson College of Science and Engineering

- Program Type: Baccalaureate
- Requirements for this program are current for Fall 2013
- Required credits to graduate with this degree: 120
- Required credits within the major: 75
- Degree: Bachelor of Science

Chemistry is a body of knowledge that helps explain the physical world and its processes. Chemists study substances--their composition, structures, properties, and reactions. The Department of Chemistry and Biochemistry provides classroom and laboratory learning opportunities and research experiences across the discipline designed to meet the needs of students in engineering, liberal arts, and preprofessional programs, as well as those who wish to pursue careers or graduate studies in chemistry or related disciplines.

Honors Requirement: The Department of Chemistry and Biochemistry honors program helps outstanding chemistry majors develop into competent, independent research workers, encourages student interest in the discipline, and aids in the transition from student to working scientist. Qualified majors may apply after the first semester of their sophomore year. Participants choose a research adviser and complete two semesters on a jointly developed project. Written reports and an oral presentation of the research are also required.

Program Delivery

This program is available:

- via classroom (the majority of instruction is face-to-face)

Admission Requirements

For information about University of Minnesota admission requirements, visit the Office of Admissions website.

General Requirements

The Board of Regents, on recommendation of the faculty, grants degrees from the University of Minnesota. Requirements for an undergraduate degree from University of Minnesota Duluth include the following:

1. Students must meet all course and credit requirements of the departments and colleges or schools in which they are enrolled including an advanced writing course. Students seeking two degrees must fulfill the requirements of both degrees. However, two degrees cannot be awarded for the same major.
2. Students must complete all requirements of the Liberal Education Program.
3. Students must complete a minimum of 120 semester credits.
4. At least 30 of the last 60 degree credits earned immediately before graduation must be awarded by UMD.
5. Students must complete at least half of their courses at the 3xxx-level and higher at UMD. Study-abroad credits earned through courses taught by UM faculty and at institutions with which UMD has international exchange programs may be used to fulfill this requirement.
6. If a minor is required, students must take at least three upper division credits in their minor field from UMD.
7. The minimum cumulative UM GPA required for graduation will be 2.00 and will include only University of Minnesota coursework. A minimum UM GPA of 2.00 is required in each UMD undergraduate major and minor. No academic unit may impose higher grade point standards to graduate.
8. Diploma, transcripts, and certification will be withheld until all financial obligations to the University have been met.

Program Requirements

1. A minor from another area of study.

2. The B.S. Chemistry major/B.S. BMB major combination satisfies the college degree requirement for a second major or minor.

3. Students earning a B.S. degree who wish to have their program certified by the American Chemical Society must take advanced courses that include additional hours of laboratory work.

Year One (20 cr)

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High school algebra and high school chemistry are required for CHEM 1153, CHEM 1154, and CHEM 1161. This schedule presupposes placement into MATH 1296.
MATH 1296 - Calculus I [LE CAT, LOGIC & QR] (5.0 cr)
MATH 1297 - Calculus II [LOGIC & QR] (5.0 cr)
CHEM 1161 *{Inactive}*[LE CAT4, NAT SCI] (5.0 cr)
or CHEM 1153 - General Chemistry I [LE CAT, NAT SCI] (4.0 cr)
CHEM 1154 - General Chemistry Lab I [LE CAT, NAT SCI] (1.0 cr)
CHEM 1162 *{Inactive}*(5.0 cr)
or CHEM 1155 - General Chemistry II (4.0 cr)
CHEM 1156 - General Chemistry Lab II (1.0 cr)

Year Two (27 cr)
CHEM 2541 - Organic Chemistry I (3.0 cr)
CHEM 2542 - Organic Chemistry II (3.0 cr)
CHEM 2543 - Organic Chemistry I Laboratory (1.0 cr)
CHEM 2545 - Organic Chemistry II Laboratory for B.S. Chemistry Majors (2.0 cr)
MATH 3280 - Differential Equations with Linear Algebra (4.0 cr)
PHYS 2013 - General Physics I [LE CAT, NAT SCI] (4.0 cr)
PHYS 2014 - General Physics Lab I [NAT SCI] (1.0 cr)
PHYS 2015 - General Physics II (4.0 cr)
PHYS 2016 - General Physics Lab II (1.0 cr)
Take the following course pair or course.
CHEM 2222 - Quantitative Analysis (3.0 cr)
CHEM 2223 - Quantitative Analysis Laboratory (1.0 cr)
or CHEM 2242 *{Inactive}*(4.0 cr)

Year Three (14 cr)
CHEM 3432 - Descriptive Inorganic Chemistry (3.0 cr)
CHEM 4641 - Thermodynamics and Kinetics (3.0 cr)
CHEM 4642 - Quantum Mechanics and Spectroscopy (3.0 cr)
CHEM 4643 - Thermodynamics and Kinetics Lab (1.0 cr)
CHEM 4644 - Quantum Mechanics and Spectroscopy Laboratory (1.0 cr)
CHEM 3322 - Biochemistry (3.0 cr)
CHEM 3324 - Biochemistry Laboratory (1.0 cr)
or CHEM 4352 - Biochemistry II (3.0 cr)
CHEM 4363 - Biochemistry Laboratory (2.0 cr)

Year Four (11 cr)
CHEM 4184 - Undergraduate Seminar I (1.0 cr)
CHEM 4185 - Undergraduate Seminar II (1.0 cr)
CHEM 4242 - Instrumental Analysis (3.0 cr)
CHEM 4243 - Instrumental Chemistry Laboratory (2.0 cr)
CHEM 4435 - Inorganic Chemistry Laboratory (1.0 cr)
CHEM 4436 - Inorganic Chemistry (3.0 cr)

Advanced Writing Requirement (3 cr)
Advanced Writing 31xx

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