Chemistry B.S.

Contact Information

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Faculty

Professor Boyles; Associate Professors Fong, Heglund; Assistant Professors Meyer, Zhu; Instructor Christofferson.

Staff

Department of Chemistry Secretary, Tara Huber; Chemical and Instrumentation Specialist, Margaret Smallbrock.

Chemistry

The Department of Chemistry offers undergraduate chemistry courses that meet the requirements for the bachelor of science degree and for other programs on campus. The chemistry program offers the American Chemical Society (ACS) certified degree, which meets the national requirements of the ACS. This degree requires 128 semester credits.

Upon graduation with a bachelor's degree in chemistry, students have knowledge of chemical and physical phenomena at the molecular level. They are expected to possess the skills of critical thinking in chemical problem-solving, such as instrumental data interpretation for molecular structure characterization. Students are expected to have a command of the four major sub-disciplines of chemistry, namely, analytical, inorganic, organic, and physical chemistry, as well as to be familiar with the chemical literature.

Chemistry graduates of the department distinguish themselves in that the chemistry curriculum gives them ample opportunity to supplement their chemical knowledge with a breadth of other courses, which may be elected from diverse offerings on campus including the humanities, social sciences, biological and physical sciences, mathematics, engineering, and more. This distinctive latitude inherent within the chemistry curriculum allows students to develop as well-rounded individuals who are able to face and meet the challenges they may anticipate in their chosen careers.

Chemistry, by its very nature, is the central science in the world, and many graduates use their degrees as a solid foundation for advanced study in chemistry as well as for study in medicine, pharmacy, veterinary medicine, forensic science, materials science, environmental science, medical technology, physical therapy, patent or environmental law, and education. These are all possibilities for students with a chemistry education. Likewise, students who opt not to further their education beyond their B.S. degrees in chemistry are also prepared for a wide variety of employment opportunities. Among former chemistry graduates, these have included research and quality assurance positions in academic, industrial, governmental, and private sectors of the economy.

The department also participates in both the M.S. and Ph.D. programs in Materials and Engineering Science (MES), the Ph.D. program in Biomedical Engineering, and the Ph.D. program in Nanoscience and Nanoengineering. Students seeking these degrees may choose to emphasize any of the representative sub-disciplines of chemistry in addition to interdisciplinary research specialties as an integral part of their graduate program of study.

The department prides itself in having modern instrumentation available not only for research but as an integral part of undergraduate education. The instrumentation within the department currently includes FT-IR spectrometers, a 300

MHz superconducting heteronuclear nuclear magnetic resonance spectrometer, a spectrofluorometer, a diode-array spectrophotometer, a voltammograph, an atomic absorption spectrometer, a gas chromatograph-mass spectrometer, and other instruments.

Advisors work closely with their assigned students in order to ensure that they will complete all degree requirements in a timely manner, will meet prerequisites for further education such as medical school, and will be knowledgeable about post-graduation options and employment opportunities.

Bachelor of Science in Chemistry, ACS Certified

The ACS-certified curriculum provides an excellent foundation in science and mathematics for professional preparation in chemistry and meets the nationally-recognized high standards established by the American Chemical Society. This curriculum opens the way for a variety of careers in research and development in private industry or government and gives the student an excellent foundation for graduate study in chemistry.

Students desiring to meet the minimum requirements for certification by the American Chemical Society should follow the curriculum outlined below.

Freshman Year

First Semester

CHEM 112	General Chemistry I	3
CHEM 112L	General Chemistry I Lab	1
ENGL 101	Composition I	3
MATH 123	Calculus I	4
Gen. Ed. Goal 3 or 4 Elective		3
IS 110	Explorations	2
CHEM 290	Seminar	0.5
TOTAL		**16.5**

Second Semester

CHEM 114	General Chemistry II	3
CHEM 114L	General Chemistry II Lab	1
MATH 125	Calculus II	4
PHYS 211	University Physics I	3
Gen. Ed. Goal 3 Elective		3
Gen. Ed. Goal 4 Elective		3
CHEM 290	Seminar	0.5
TOTAL		**17.5**

Sophomore Year

First Semester

CHEM 332	Analytical Chemistry	3
CHEM 332L	Analytical Chemistry Lab	1
CHEM 326	Organic Chemistry I	3
CHEM 326L	Organic Chem I Lab	2
MATH 321	Differential Equations	4
CHEM 252	Systematic Inorganic Chemistry	3
PE	Physical Education	1
CHEM 290	Seminar	0.5
TOTAL		**17.5**

Second Semester

PHYS 213	University Physics II	3
PHYS 213L	University Physics II Lab	1
CHEM 328	Organic Chemistry II	3
CHEM 328L	Organic Chem II Lab	2
ENGL 279	Technical Comm I	3
Humanities or Social Sciences Elective(s)[1]		5
CHEM 290	Seminar	0.5
TOTAL		**17.5**

Junior Year

First Semester

ENGL 289	Technical Comm II	3
CHEM 342	Physical Chemistry I	3
CHEM 342L	Physical Chem I Lab	1
Elective(s)		9
PE Physical Education		1
CHEM 490	Seminar	0.5
TOTAL		**17.5**

Second Semester

CHEM 344L	Physical Chem II Lab	1
CHEM 344	Physical Chemistry II	3
CHEM 370	Chemical Literature	1
Advanced Chemistry Requirement[2]		6
CHEM 490	Seminar	0.5
Advanced Chemistry Elective(s)[3]		3
TOTAL		**15.5**

Senior Year

First Semester

Elective(s)	8
CHEM 490 Seminar	0.5
Advanced Chemistry Requirement[2]	3
Advanced Chemistry Elective[3]	3
TOTAL	**14.5**

Second Semester

Electives	6
Adv Chemistry Requirement[2]	6
CHEM 490 Seminar	0.5
TOTAL	**12.5**

128 credits required for graduation

Curriculum Notes

[1]A minimum of 16 credit hours of university-approved humanities and social sciences are required with a minimum of 6 hours in humanities and 6 hours in social sciences.

[2]Fifteen credits of advanced chemistry courses are required: Chem. 434, 434L, 452, 452L, 460, and 482.

[3]Three credits of advanced chemistry electives are required. Take any one of the following courses: 420, 421, 426.