The Department of Chemistry and Applied Biological Sciences
Bachelor of Science in Chemistry

Contact Information
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Faculty
Professors Bang, Boyles, and Sinden; Associate Professors DeVeaux, Fong, Heglund, Sani, and Zhu; Assistant Professor Smirnova; Senior Lecturer Meyer; Lecturer Filipova; Instructors Christofferson, Coble, K. Gilcrease, and Marshall.

Staff
Department Senior Secretary, Tara Huber;
Chemical and Instrumentation Specialist,
Margaret Smallbrock.

Chemistry and Applied Biological Sciences
The Department of Chemistry and Applied Biological Sciences offers undergraduate Chemistry courses that meet the requirements for an American Chemical Society (ACS) certified Bachelor of Science Degree in Chemistry.

Upon graduation with a BS in Chemistry, students have knowledge of chemical and physical phenomena at the molecular level. They possess critical thinking skills in chemical problem-solving and have a command of the five major sub-disciplines of Chemistry: Analytical, Inorganic, Organic, Physical, and Biochemistry.

The Chemistry curriculum provides students ample opportunity to supplement their Chemistry knowledge through the diverse offerings of other departments on campus, including: mathematics, engineering, humanities, social and behavioral sciences, biological and physical sciences, art and music, physical education, and more. The distinctive latitude inherent within the Chemistry curriculum allows students to develop as well-rounded individuals who are able to face and meet the challenges anticipated in their chosen careers. Many students use their Chemistry Degree as a solid foundation for graduate study in Chemistry or for further study in medicine, dentistry, pharmacy, veterinary medicine, forensic science, materials science, environmental science, medical technology, physical therapy, patent or environmental law, and education. Students who opt not to further their education beyond their BS are well prepared for a wide variety of employment opportunities. Former SDSM&T Chemistry graduates have served in research and quality assurance positions in academic, industrial, governmental, and private sectors. The Department of Chemistry and Applied Biological Sciences prides itself in having modern laboratory facilities and instrumentation available, not only for research, but as an integral part of undergraduate education. Instrumentation includes: FT-IR spectrometers, 300-MHz superconducting heteronuclear nuclear magnetic resonance spectrometer, spectrofluorometer, diode-array spectrophotometer, voltammograph, atomic absorption spectrometer, a gas chromatograph-mass spectrometer, and other.

Advisors work closely with students to ensure they complete all degree requirements on time and meet prerequisites for further post-graduate education in chemistry, medical or professional schools. Advisors have knowledge of additional education and employment opportunities.
Bachelor of Science in Chemistry: ACS Certified

The ACS-certified Chemistry 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 degree requirements for certification by the American Chemical Society must complete the courses represented in the sample course of study below.

ACS Certified Curriculum

**Freshman Year**

**First Semester**
- CHEM 112 General Chemistry I 3
- CHEM 112L General Chemistry I Lab 1
- ENGL 101 Composition I 3
- IS 110 Explorations 2
- MATH 123 Calculus I 4
- General Education Goal 3 or 4 Elective 3
- 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
- General Education Goal 3 Elective 3
- General Education Goal 4 Elective 3
- CHEM 290 Seminar 0.5
- **TOTAL 17.5**

**Sophomore Year**

**First Semester**
- CHEM 252 Systematic Inorganic Chem 3
- CHEM 332 Analytical Chemistry 3
- CHEM 332L Analytical Chemistry Lab 1
- CHEM 326 Organic Chemistry I 3
- CHEM 326L Organic Chemistry I Lab 2
- MATH 321 Differential Equations 3
- CHEM 290 Seminar 0.5
- **TOTAL 15.5**

**Second Semester**
- CHEM 328 Organic Chemistry II 3
- CHEM 328L Organic Chemistry II Lab 2
- ENGL 279 Technical Communications I 3
- PHYS 213 University Physics II 3
- PHYS 213L University Physics II Lab 1
- General Education Goal 3 or 4 Elective 3
- CHEM 290 Seminar 0.5
- **TOTAL 15.5**

**Junior Year**

**First Semester**
- CHEM 342 Physical Chemistry I 3
- CHEM 342L Physical Chemistry I Lab 1
- ENGL 289 Technical Communications II 3
- Electives\(^1\) 6
- Advanced Chemistry Requirement\(^2\) 3
- CHEM 490 Seminar 0.5
- **TOTAL 16.5**

**Second Semester**
- CHEM 344 Physical Chemistry II 3
- CHEM 344L Physical Chemistry II Lab 1
- CHEM 370 Chemical Literature 1
- Electives\(^1\) 3
- Advanced Chemistry Requirement\(^2\) 5
- CHEM 490 Seminar 0.5
- **TOTAL 13.5**

**Senior Year**

**First Semester**
- Electives\(^1\) 9
- Advanced Chemistry Elective\(^3\) 3
- CHEM 490 Seminar 0.5
- **TOTAL 12.5**

**Second Semester**
- Electives\(^1\) 5
- Advanced Chemistry Requirement\(^2\) 7
- CHEM 490 Seminar 0.5
- **TOTAL 12.5**

**Total Hours** \(120\)

Curriculum Notes:

1. Electives, twenty-three (23) credit hours are required.
2. Advanced Chemistry Requirement (15 hr)
3. Advanced Chemistry Electives (3 hr required)

**Curriculum Notes:**

- CHEM 434 Instrumental Analysis 3
- CHEM 434L Instrumental Anal Lab 2
- CHEM 452 Inorganic Chemistry 3
- CHEM 452L Inorganic Chemistry Lab 1
- CHEM 464 Biochemistry I 3
- CHEM 482 Environmental Chemistry 3

- CHEM 420 Organic Chemistry III 3
- CHEM 421 Spectroscopic Analysis 3
- CHEM 426 Polymer Chemistry 3