COLLEGE OF
Saint Benedict Saint John's
UNIVERSITY

Chemistry

Program Overview

The study of chemistry at CSB and SJU will provide you with the skills necessary to analyze the many complex problems facing us today and the ability to seek solutions which reflect balanced economic, political and ethical viewpoints.

Chemistry is a central science and plays a pivotal role in everyday life. The field has dynamic borders with biology, geology, mathematics, physics and psychology. In addition, the principles of chemistry are applied in such diverse areas as agriculture, environmental studies, forensic science, medicine, pharmaceutical design and synthetic fuels research, to name a few. The chemistry department at the College of Saint Benedict and Saint John's University has a long history of providing excellent training in chemistry within the context of the liberal arts tradition.

The 13 members of the chemistry faculty represent all the major areas of specialization in chemistry and are dedicated to the art of teaching. Consistent with the liberal arts tradition, classes are small. First-year and sophomore class sizes are kept small to increase the interaction between students and faculty. These small class sizes, along with hands-on experience with chemical instrumentation and early opportunity for involvement in research projects, are the principal advantages of a major in chemistry at CSB and SJU.

Program Highlights

- Faculty-student research projects are a mainstay of our department. We are currently studying water quality in central Minnesota, copper compound synthesis, and computational studies of novel compounds.
- Our diverse faculty can guide students in specialty areas such as polymers, medicinal chemistry, synthetic organic or inorganic chemistry, and biochemistry.
- State-of-the-art technology and equipment prepare our students for real-world research opportunities.
- Small introductory classes and labs so you get lots of faculty interaction throughout your degree program.
- Our chemistry department ranked 16th out of 914 liberal arts institutions for graduates who have gone on to receive their Ph.D. in chemistry.
- Our faculty has receive more than 25 grants in recent years to fund equipment and do research, which is why we have more than $1 million in modern instrumentation, including a new spectrofluorometer.
- *Peterson's Top Colleges for Science* lists our science and math programs among the best in the nation.

Chemistry Curriculum

As a CSB/SJU chemistry student, you can choose two paths to achieving a major: the standard sequence, or the American Chemical Society approved program. CSB and SJU also offer a complete biochemistry major.

The standard 50-credit sequence introduces you to the main areas of chemistry and is excellent preparation for those interested in primary or secondary education, medicine, government service or further study in the areas of law, business management and agricultural science. This course of study also allows you the option of a second major in one of the more than 40 major and pre-professional programs offered at CSB and SJU.

The 63-credit American Chemical Society approved program provides for additional study in organic, inorganic, analytical and physical chemistry as well as biochemistry. This course of study is recommended for those students intending to pursue graduate work in chemistry and related fields, and for those seeking immediate employment in the chemical industry or government laboratories.

Some chemistry courses include:

- General Chemistry I & II
- Organic Chemistry I & II
- Chemical Literature
- Chemical Thermodynamics and Kinetics
- Biochemistry
- Quantum Chemistry and Structure of Matter
- Analytical Chemistry
- Advanced Analytical Chemistry
- Advanced Inorganic Chemistry
- Senior Honors Thesis

For a complete listing of course offerings, please visit: http://www.csbsju.edu/chemistry/curriculum/default.htm

Chemistry Facilities and Equipment

An obvious indication of the strong commitment to chemistry at CSB and SJU is the Ardolf Science Center. The chemistry department is the main occupant of the 41,000 square-foot-building which is equipped with state-of-the-art laboratories and classrooms that support a wide variety of classroom teaching methods. The chemistry department updates and modernizes its equipment on a continuous basis. We currently have more than $1 million in modern instrumentation, and our most recent acquisition is a $160,000 liquid chromatograph-mass spectrometer.

The laboratories in the Ardolf Science Center are equipped with the latest in scientific instrumentation and supporting computer technology. The chemistry department has a hands-on philosophy with regard to scientific instrumentation. Students begin using research-quality instruments in the first semester of their coursework.

Computer technology has made enormous strides in the last decade, and the chemistry department has integrated it into every level of its curriculum. Students learn to use the most powerful software packages and get experience with computer-driven data acquisition and refinement. They also see firsthand the power of the computer in the areas of molecular graphics and the modeling of fundamental chemical phenomena. In the past three years, two members of the chemistry department won awards for the incorporation of chemical computation into their teaching.

Student Research and Extracurricular Activities

The continued advancement of chemistry is based on original laboratory research and the presentation of that research. At CSB and SJU, research and the purchase of scientific instrumentation have been supported in part by grants from the National Science Foundation, the National Institutes of Health, Research Corporation and the Camille and Henry Dreyfus Foundation. The ACS-certified chemistry major requires students to complete a substantial research project and present a paper outlining their findings during their senior year.

Students also have the opportunity to present their research at annual research symposia at the regional and national levels. Recently students have made presentations in specific areas of biochemistry, organic chemistry, physical chemistry, analytical chemistry and inorganic chemistry. It is common for chemistry students to assist faculty with research projects on campus. Six to 12 summer research fellowships are available to chemistry students each year. Students awarded these fellowships receive a competitive stipend. Students also have the option to participate in summer research programs at other colleges, universities, companies or national laboratories.

The Chemistry Club is a student affiliate of the American Chemical Society. The Chemistry Club is active on campus in arranging field trips to industrial laboratories, sponsoring guest speakers from industry and research universities and in planning social events.

Outcomes:

Chemistry graduates from CSB and SJU have a wide variety of options. "About half of our graduates enter graduate or professional schools while the other half choose employment in related fields," says Carleen Schomer OSB, associate professor of chemistry. Graduates are employed as professional chemists by business, industry or educational institutions and are engaged in many kinds of basic and applied research. For a number of chemistry graduates, their chemistry degree serves as valuable preparation for graduate or professional school in engineering, medicine, business or law.

Office of Admission • College of Saint Benedict/Saint John's University • PO Box 7155, Collegeville, MN 56321
(800) 544-1489, (320) 363-2196, (320) 363-2750 (fax) • E-mail admissions@csbsju.edu

Positions held by graduates include:

- polymer chemist in Texas
- professor of environmental chemistry at John Hopkins University
- neurologist in Missouri
- president of a computer firm in Minnesota
- marketing manager for a chemical company in Ohio
- cardiologist in Kansas
- patent lawyer in Minnesota
- Peace Corps volunteer in Africa
- director of research in analytical chemistry for Ecolab
- forensic scientist with the Minnesota Buruea of Criminal Aprehension

Graduate schools attended by recent graduates include:

- Boston University
- University of Minnesota
- Mayo Clinic
- Northwestern University
- University of Utah

Faculty Members

Robert Fulton
Ph.D., University of Minnesota

Kate Graham
Ph.D., Cornell University

David Huber
Ph.D., University of Minnesota

Henry Jakubowski
Ph.D., University of Iowa

Brian Johnson
Ph.D., University of Minnesota

Nicholas Jones
Ph.D., Montana State University

Ed McIntee
Ph.D., University of Minnesota

Anna McKenna
Ph.D., Clemson University

Frank Rioux
Ph.D., Iowa State University

Michael Ross
Ph.D., University of Minnesota

Chris Schaller
Ph.D., Cornell University

Carleen Schomer, OSB
D.A., University of Illinois at Chicago

Richard White
Ph.D., Virginia Polytechnic Institute & State University

"One of the most important features of the building is the amount of laboratory space dedicated to student/faculty research," says Dr. Brian Johnson, professor of chemistry. We want to emphasize that chemistry is an on-going form of inquiry and that it is continually evolving."