Chemistry and Chemical Biology

Website (https://cos.northeastern.edu/chemistry-chemical-biology/)

Penny Beuning, **PhD**
Professor and Chair

617.373.2822

The Department of Chemistry and Chemical Biology provides education in basic chemistry and modern chemistry-related disciplines. The department offers an American Chemical Society–certified program leading to a Bachelor of Science in Chemistry and also offers a Bachelor of Science in Biochemistry jointly with the Department of Biology. The department offers two combined majors. In conjunction with the Department of Marine and Environmental Sciences, the department offers a combined Bachelor of Science in Environmental and Sustainability Sciences and Chemistry. Along with Khoury College of Computer Sciences, the department also offers a Bachelor of Science in Data Science and Chemistry. The overall objective of the Bachelor of Science in Chemistry major program is to provide the fundamental scientific background and laboratory training for students as they prepare for chemically related careers or advanced study in fields including the traditional chemical specialties, as well as biochemistry, materials science, forensic science, medicine, education, law, and other endeavors that draw upon an understanding of the chemical basis of the world around us.

Key general objectives are the development of qualitative and quantitative problem-solving skills and effective communication skills. Specific learning objectives for the chemistry major include developing conceptual understanding and problem-solving abilities in the fundamental chemical subfields of analytical chemistry, biochemistry, inorganic chemistry, organic chemistry, and physical chemistry; gaining a foundation of physics and mathematics and integrating these areas with chemical principles; performing quantitative measurements and analyzing the resulting data; synthesizing and characterizing compounds; learning proper laboratory practices, including safety; developing proficiency with modern instruments and computers for data acquisition and analysis; and making meaning of research results and learning the relevance of chemistry to biology, pharmacology, medicine, manufactured and natural materials, and the environment.

Most of our chemistry majors participate in the cooperative education program and thereby gain invaluable professional experience to augment their classroom and laboratory work. Not only does this experience add immensely to the overall education received, it also has the potential to provide contacts and references for later employment or graduate school admissions. Chemistry majors also undertake a research project for at least one semester under the supervision of a faculty member. The availability of elective courses in the program will allow a student to take more advanced courses or additional research in the department or to add courses from other programs, such as engineering, in the case of an interest in materials chemistry. Qualified students may also participate in a BS/MS program.

Programs

Bachelor of Science (BS)

- Chemistry (https://catalog.northeastern.edu/undergraduate/science/chemistry-chemical-biology/chemistry-bs/)
- Data Science and Chemistry (https://catalog.northeastern.edu/undergraduate/computer-information-science/computer-information-science-combined-majors/data-science-chemistry-bs/)
- Environmental and Sustainability Sciences and Chemistry (https://catalog.northeastern.edu/undergraduate/science/marine-environmental/environmental-sustainability-sciences-chemistry-bs/)

Minor

- Chemistry (https://catalog.northeastern.edu/undergraduate/science/chemistry-chemical-biology/chemistry-minor/)
- Environmental Chemistry (https://catalog.northeastern.edu/undergraduate/science/chemistry-chemical-biology/environmental-chemistry-minor/)

Accelerated Programs

See Accelerated Bachelor/Graduate Degree Programs (https://catalog.northeastern.edu/undergraduate/science/accelerated-bachelor-graduate-degree-programs/#programstext)