

# Chemistry and Biochemistry



Virtually everything we do involves chemistry. From the clothes we wear to the detergent we wash them in, from the food we eat to the packaging it comes in, from our cars to our computers, chemistry has improved our health, our lives and our environment. Do you know someone whose life was saved by epinephrine after a bee sting or by an airbag in an auto accident? If so, you can thank a chemist! Although chemists often work behind the scenes, their impact is everywhere.

## Program Details

We offer a B.S. degree in chemistry and a choice of four emphases to match your career interests. Emphases 1 (Chemistry) and 2 (Biochemistry) are for students planning to pursue advanced degrees or careers as professional chemists or biochemists. With proper electives, either emphasis would be appropriate for students interested in forensic science. Emphasis 3 (Secondary Teaching) is for those who want to teach in middle school and high school. Emphasis 4 (Chemistry for Preprofessional Students) is designed for students who plan to enter medical or pharmacy school.

## Clubs, Groups, Events

Alpha Chi Sigma brings together men and women pursuing chemistry-related careers to help spread the knowledge of chemistry and other scientific fields, as well as providing services to the local community. The NIU Chemistry Club sponsors fun events each year, including the popular Chem Demo Night, a themed evening of experiments and demos that is open to the public. Student groups participate in STEMfest every fall, encouraging young people and their parents to explore STEM fields and careers.

## Engaged Learning

Picture yourself in a lab, performing research alongside faculty and graduate students. This is you at NIU! Our faculty are involved in cutting-edge research in areas such as eye health, nanomaterials, cancer treatment and energy storage. Research experience is built into our curriculum - work individually with faculty and graduate students, and then share your results with peers and the community. In addition, every required chemistry lecture class comes with a laboratory where you can gain hands-on experience with modern techniques and instrumentation.

*“To me, the undergraduate research required in the chemistry and biochemistry program is an invaluable experience for any student. I feel more confident about my abilities as a chemist and understand more of the expectations required of me in a professional lab because of the experiences I gained in research.”*

—Sara Billenstein,  
Undergraduate Student



NORTHERN ILLINOIS UNIVERSITY

**Department of Chemistry  
and Biochemistry**

College of Liberal Arts and Sciences

# B.S. in Chemistry

The requirements for a degree depend upon which emphasis you choose to explore. The following list is typical for Emphasis 1, Professional Chemistry. For complete requirements, see [go.niu.edu/chemugrad](http://go.niu.edu/chemugrad). The department's professional emphases in chemistry and biochemistry are certified by the American Chemical Society (ACS). The ACS has ranked the NIU Department of Chemistry and Biochemistry among the top producers of ACS-certified bachelor's degrees.

## Contact Information

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[niu.edu/chembio](http://niu.edu/chembio)



## Major Requirements (43-44 Credits)

### Requirements in Department (40)

CHEM 210	General Chemistry I
CHEM 212	General Chemistry Laboratory I
CHEM 211	General Chemistry II
CHEM 213	General Chemistry Laboratory II
CHEM 336	Organic Chemistry I
CHEM 338	Organic Chemistry Laboratory I
CHEM 337	Organic Chemistry II
CHEM 339	Organic Chemistry Laboratory II
CHEM 325	Analytical Chemistry I
CHEM 425	Analytical Chemistry II
CHEM 440	Physical Chemistry I
CHEM 442	Physical Chemistry Laboratory I
CHEM 441	Physical Chemistry II
CHEM 443	Physical Chemistry Laboratory II
CHEM 460	Inorganic Chemistry of the Transition Metals
CHEM 461	Inorganic Chemistry Laboratory
CHEM 470	General Biological Chemistry
CHEM 498	Research or CHEM 499 - Honors Research

### Electives (3-4)

#### Requirements outside Department

ENGL 350	Writing across the Curriculum
MATH 229	Calculus I
MATH 230	Calculus II
MATH 232	Calculus III or MATH 336 - Ordinary Differential Equations
PHYS 253	Fundamentals of Physics I: Mechanics
PHYS 273	Fundamentals of Physics II: Electromagnetism

## Tutoring Available

In addition to tutoring offered through the ACCESS Center, the Department offers free tutoring services in Introductory and General Chemistry. Teaching Assistants are available in the Chemistry Help Room during regularly scheduled office hours.

## Honors Program

The B.S. degree with honors in chemistry will be awarded to students who have a minimum 3.20 overall GPA and a 3.20 GPA in all requirements, both in and outside the department, and who complete 13 semester hours of honors chemistry courses numbered CHEM 325 and above (not including CHEM 370). The honors chemistry coursework must include CHEM 499 and the presentation of a capstone thesis.

## Careers In Chemistry

Most chemists work in research, with about two-thirds of the bachelor's level chemistry graduates working in the for-profit sector and in a variety of settings, including:

- Chemical manufacturing companies
- Cosmetic companies
- Environmental assessment firms
- Medical laboratories
- Petroleum companies
- Pharmaceutical companies
- Utility companies

Chemistry majors also work in educational settings and in government. A small percentage are employed by nonprofit charities or research foundations. Many of our graduates go on to pharmacy, medical and graduate schools.

Our close proximity to Chicago, a major Midwest epicenter for the chemical and pharmaceutical industries, provides access to numerous career and research opportunities.

