



# Chemistry/Biochemistry

## College of Science & Health

Each day, our society is faced with many issues and problems that can be addressed and solved only by well-trained chemists and biochemists. For example, the demands for new consumer products, high-tech materials, energy producing fuels, and disease fighting molecules are met by these professionals on a daily basis. In addition, chemists are frequently responsible for the management of environmental problems, such as air and water pollution, and for the scientific education of our youth. Chemists and biochemists are not only trained as analytical thinkers and problem solvers, but also as effective communicators of scientific concepts. This makes the various chemistry and biochemistry degree programs at UW-La Crosse highly attractive to many employers, graduate programs in the sciences, and professional programs, such as schools of medicine or law.

The Department of Chemistry at UW-L is approved by the American Chemical Society's Committee on Professional Training. This approval acknowledges the quality program, staff, and facilities of the Department and enables us to offer the prestigious ACS-Certified B.S. degree in chemistry, among several other bachelor's degree options.

### Undergraduate Programs

#### Majors:

- Chemistry\*
- Chemistry-ACS Certification\*
- Chemistry-Business Concentration
- Chemistry-Environmental Science Concentration
- Chemistry-Engineering Dual Degree (*with UW and UM*)
- Biochemistry

#### Minor:

- Chemistry\*

*\*Teacher certification available*

### Department Features

The Department of Chemistry currently has over 250 students enrolled as majors. Each year, approximately 20 students graduate with B.S. degrees in chemistry or biochemistry. Typically, 30-50% of our graduating seniors apply to, and are accepted by, graduate programs in major research universities to pursue the doctoral degree in chemistry or a related area. About 15% of UW-L chemistry majors who continue their studies do not plan to be chemists, but intend to work in related fields such as pharmacology, toxicology, pharmacy, chemical biology, or materials science.

A number of chemistry majors go on to study medicine, and they eventually become physicians by earning the M.D. degree. Other advanced areas of study often chosen by our graduates include chemical engineering, dentistry, veterinary medicine, and other health professions.

The Biochemistry Major is an excellent option for students interested in studies at the interface of chemistry and biology. Many of our biochemistry students will pursue a career in the biotechnology industry. Biochemistry graduates also may enter a Ph.D. program or pursue professional degrees in medicine, dentistry, veterinary medicine, or other health areas. In fact, the Biochemistry Major serves as an ideal "pre-medicine" major.

#### Accreditation

As a result of accreditation by the American Chemical Society's Committee on Professional Training, students completing the ACS-approved chemistry curriculum may be certified as professional chemists by the society. Although UW-L graduates have no difficulty obtaining employment or being accepted by graduate schools, the prestigious ACS-certified major is highly valued by employers and graduate schools.

#### Faculty

The faculty members of the Chemistry Department are committed to excellence in teaching, and they also believe it is important to work with students

outside the classroom and in the laboratory.

Each faculty member generously gives his or her time to assist students with coursework and college and career advising. The interaction between faculty members and students is particularly close when a student participates in an undergraduate research project under the direction of a chemistry professor.

UW-L offers a range of support for these types of student research experiences. Undergraduate chemistry majors routinely co-author professional presentations and publications with our chemistry faculty.

#### Internships

Students are encouraged to participate in internship experiences while in college. These internships give students practical experience in chemistry, and students also may earn college credit and be paid for their services. The Department of Chemistry and the UW-L Career Services office announce a number of paid internships and summer research experiences annually.

#### Departmental Scholarships

Each year, the Department of Chemistry awards over \$20,000 in scholarships to chemistry and biochemistry majors. About one-third of our majors receive some form of scholarship assistance, ranging from \$100 to over \$3,000 a year. In addition, graduate study incentive scholarships are awarded to chemistry majors who decide to

pursue the Ph.D. degree after graduation.

### Student Organization

The Department sponsors a chemistry student organization known as the ACS-Student Affiliates, or "Chemistry Club." This group of chemistry majors and minors sponsors numerous professional and social activities that bring students and faculty together during the year. It also brings outside speakers to campus, tutors students, and maintains records on employment opportunities and graduate programs. This group has been named one of the top national student organizations among over 700 similar groups.

## Major Course Offerings

- General Chemistry I & II
- Analytical Chemistry
- Organic Chemistry I & II
- Physical Chemistry I & II
- Inorganic Chemistry
- Biochemistry I & II
- Instrumental Analysis
- Spectroscopy
- Advanced Synthesis
- Nuclear Chemistry
- Environmental Chemistry

## Career Opportunities

### Entry Level Jobs

- Analysis/testing as a Laboratory Chemist or Biochemist
- High School Science Teacher (*with teacher certification*)
- Management Trainee
- Pollution Control
- Production Control
- Quality Assurance Chemist
- Research Technician (*government and private industry*)
- Sales Representative

### Advanced Career Development

- Chief Project Chemist or Biochemist
- College Professor (*with advanced degree*)
- Director of Research and Development
- Industrial Administrator
- Plant Manager
- Production Control Manager

- Research and Development Chemist or Biochemist

### Further Education

- Graduate study in analytical chemistry, organic chemistry, biochemistry, inorganic chemistry, physical chemistry, material science, polymer chemistry, pharmacology, chemical engineering, etc.
- Medical or other professional study in pharmacy, veterinary medicine, nuclear medicine, optometry, dentistry, etc.
- Law School (*e.g., patent law*)
- Industrial Management Training
- Graduate study in business

## Occupational Outlook

Students with a major in chemistry who are seeking employment have a variety of opportunities available to them. Private industry and government laboratories hire bachelor's degree chemists for quality control of production, research and development, and preparation of specific compounds for a wide range of commercial uses. The B.S. chemist usually starts working in the laboratory, frequently has major responsibilities in the projects pursued by that laboratory, and eventually may move into more senior research or managerial positions.

Students in the Chemistry–Business Concentration major complete the basic core of the chemistry major as well as selected courses in management, accounting, finance, and economics. Graduates of this program are well prepared to move into the fields of administration, sales, and management within the chemical industry.

Biochemistry majors can expect excellent employment opportunities too. The growth of the biotechnology industry has led to high demand for graduates in this area. Graduates can expect placement in industry or government laboratories, working in such areas as drug design, vaccine development, biological assays, and protein or genetic engineering. Employment surveys

show that Biochemistry Majors are the primary candidates recruited by biotechnology companies.

Students who graduate with a chemistry major and also gain certification as teachers may teach in high schools in any state where they meet the certification requirements. A shortage of well-qualified middle and high school science teachers exists in the U.S. today; thus, employment opportunities in this area also are excellent.

In general, employment opportunities for professional chemists and biochemists abound. Graduates from UW-La Crosse often find themselves choosing among several job offers. Recent national surveys project a need for chemists extending beyond the year 2012. Prospects for careers in chemistry are excellent, and employment opportunities are greater now than any time since the early 1960s.

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