



# BACHELOR OF SCIENCE: CHEMISTRY

Chemistry links all of the natural sciences together through the study of matter. Chemistry students learn to identify, categorize, and manipulate the building blocks of the universe. While doing so, they gain skills necessary to succeed in professional work environments.

Monmouth University's Bachelor of Science in Chemistry programs prepare students for an array of possibilities after graduation. They provide students with excellent instruction in a wide range of chemistry courses as well as essential experience in laboratory courses and research to give them advantages when entering graduate programs, professional schools, and the job market.

## DEGREE PROGRAMS

Students can choose concentrations in Advanced Chemistry and Biochemistry. The Advanced Chemistry concentration is certified by the American Chemical Society. It includes comprehensive study of all chemistry sub-disciplines and provides the best overall preparation for careers and graduate studies in chemistry. The Biochemistry concentration appeals to students who are interested in exploring the relationship between chemistry and biology. This concentration is especially appropriate for students interested in medical school or careers in the pharmaceutical industry. Both of these concentrations provide excellent preparation for graduate studies, medical schools, and direct entry into the workforce. There is also a degree program with no concentration that is suitable for those who wish to pursue double majors. It is also useful as a framework to build on in preparation for studies in professional schools or for those students interested in alternative certification for science teaching.

At Monmouth, students completing a major in chemistry and education with an endorsement in secondary education and physical sciences can do so within the normal 128 credits required for graduation. They are then eligible to teach high school chemistry, physics, and related sciences. This certification is in great demand in New Jersey and the surrounding region.

## OUTCOMES

A chemistry degree can lead to careers spanning the fields of research, education, medicine, pharmaceuticals, forensic science, and law. The chemistry program develops students' knowledge, critical thinking skills, laboratory skills, and presentation skills, and it instills in students the spirit of teamwork necessary for success in industry. Our graduates have gone on to work for major companies such as:

- Johnson & Johnson
- L'Oreal
- Merck
- Sanofi
- International Flavors & Fragrances
- Unilever
- Church & Dwight
- Pfizer
- Westward Pharmaceuticals

Our alumni have found placement in outstanding graduate schools, including:

- University of California
- Georgetown
- Purdue
- Johns Hopkins
- Penn State
- Oregon State
- Notre Dame
- University of Delaware
- Carnegie-Mellon
- M.I.T.

Ph.D. degrees in Chemistry and related fields can generally be obtained at no cost to students, because universities provide adequate funding for tuition and living expenses.

Our students have also gone on to medical, pharmacy, and other health-related professional schools, including:

- Drexel
- Rowan
- Columbia
- Stony Brook
- Fairleigh Dickinson
- Rutgers



## RESEARCH OPPORTUNITIES

Monmouth chemistry students are encouraged to engage in research with our faculty, who represent the major areas of chemistry and physics listed below. Students engaged in undergraduate research have opportunities to present their work at local, regional, and national conferences. These students receive individualized attention and mentoring from faculty. Educational experiences such as these contribute to the unique, collaborative culture in the Department and the School of Science. Faculty research interests include:

- Synthetic Organic Chemistry
- Medicinal Chemistry
- Analytical Chemistry
- Environmental Chemistry and Toxicology
- Inorganic Chemistry
- Computational Chemistry
- Biochemistry
- Biophysical Chemistry
- Chemical Education
- Geophysics

## FACILITIES & TECHNOLOGY

The Edison Science Building has undergone a major renovation, completed in the fall of 2017. We now enjoy state-of-the-art laboratories to expand our research and teaching capabilities.

Students learn about the practical aspects of chemistry and instrumentation in our teaching and research laboratories, under the guidance of experienced and dedicated faculty. Computerized instrumentation and automated data acquisition are important features of many laboratory procedures.

Students have the opportunity to work with modern instrumentation, such as:

- Superconducting Nuclear Magnetic Resonance (NMR) spectrometer
- Gas chromatography-mass spectrometer
- Liquid chromatography-mass spectrometer
- Fourier-Transform Infrared (FT-IR) spectrophotometer
- Ultraviolet/Visible (UV/VIS) spectrophotometer
- High-Performance Liquid Chromatograph (HPLC)
- BAS Epsilon Electrochemical analyzer
- X-ray fluorescence analyzer
- Circular Dichroism spectrophotometer

A sense of academic community is created by students studying and working together in areas dedicated for that purpose, including computer labs featuring Windows, Macintosh, and Linux computers.

Shared workspaces and small class sizes ensure that faculty in the Department of Chemistry and Physics are accessible to students seeking help or interested in delving deeper into their studies.

## CLUBS & ORGANIZATIONS

The Chemistry Club, which is recognized by and affiliated with the American Chemical Society (ACS), promotes fellowship among those students interested in chemistry. The club sponsors social events, attends regional meetings of the ACS, organizes presentations on research opportunities, and presents entertaining demonstrations at local schools. Senior chemistry students with appropriate credentials may be selected for membership in Phi Lambda Upsilon, the national chemistry honor society.

