Biochemistry

Department Information

- **Department Chair:**
  Gregory Cook, Ph.D.
- **Graduate Admissions Director:**
  Svetlana Kilina, Ph.D.
- **Department Location:**
  Ladd Hall
- **Department Phone:**
  (701) 231-8694
- **Department Web Site:**
  www.ndsu.edu/chemistry (http://www.ndsu.edu/chemistry/)
- **Application Deadline:**
  April 15 for fall, October 31 for spring. Spring admissions depend on the availability of fellowships and faculty interests. If there are no spring openings, spring applications are automatically considered for the subsequent fall semester.
- **Credential Offered:**
  Ph.D., M.S.
- **Test Requirement:**
  GRE required for applicants who have not earned a degree in the U.S. GRE (general and subject recommended for domestic applicants, but not required)
- **English Proficiency Requirements:**
  RA - TOEFL 71, IELTS 6, Duolingo 100; TA Grader - TOEFL 79, IELTS 6.5, Duolingo 110; TA Instructor - TOEFL 81, IELTS 7, Duolingo 115

The Department of Chemistry and Biochemistry offers graduate study leading to the Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) degrees. The department also participates in the interdisciplinary Ph.D. program in Cellular and Molecular Biology.

At the start of the first year of study, entering graduate students take entrance examinations in chemistry and biochemistry, as well as analytical, inorganic, organic, and physical chemistry. The graduate student progress committee uses these exams for advisory purposes in recommending course work during the first year. As a consequence, programs are individually tailored to the needs of each student.

The chemistry, biochemistry, and molecular biology of plant, animal, insect, and microbial systems are studied through advanced course work and research. Selection of the area of emphasis depends on the interests of the student. Typically, course work is completed in one to one-and-a-half years for M.S. candidates, and two years for Ph.D. candidates, leaving later years for full-time thesis research. The typical time to complete a graduate degree averages three years for the M.S. degree and approximately five years for the Ph.D.

Research Opportunities and Infrastructure

The Department of Chemistry and Biochemistry is a research intensive department with funded research programs spanning areas from materials to medicine. External research grants from the National Science Foundation, National Institutes of Health as well as many other public and private agencies support the graduate programs in the department.

All research and most teaching activities within the department occur within two centrally-located buildings. Sugihara Hall, a 100,000 square foot modern research facility, was opened in January 2022 to house the department offices, core instrument facilities and research labs. Research is also carried out in the Quinten Burdick building directly across the street from Sugihara Hall.

The department facilities house both teaching and research labs, glassblowing facilities, as well as stockroom and multiuser equipment for the campus. Modern instrumentation is vital to research in the chemical sciences. The quality and quantity of instrumentation within the department has been greatly enhanced in the last few years through aggressive fundraising efforts and university matching support.

The department has upgraded its mass spectrometry capabilities to include a Bio-TOF III with accurate mass analysis, ESI and CI ionization; as well as an Esquire 3000 Plus - an Ion trap instrument with MS-MS and proteomics capabilities. The department also has modern 400 and 500 MHz Nuclear Magnetic Resonance (NMR) spectrometers for research with specialized capabilities for both small molecule analysis and protein NMR. The Materials Characterization Laboratory houses the departmental X-ray crystallography facilities and a brand new Analytical Ultracentrifuge. In addition to materials characterization, a Core Biology Facility that serves multiple users is housed within the department for performing bioassays, cell and tissue culture work, and molecular biology experiments. The facility has 96- and 384-well plate fluorimeters, culture changers, flow hoods, RT-PCR and FPLC protein purification instrumentation. All core facilities are staffed with highly trained technical staff for scientific consultation and training.

Prospective students are encouraged to visit the Department of Chemistry and Biochemistry website (http://www.ndsu.edu/chemistry/) for contact and more information.