

Chemistry

The intricacy and beauty of our natural world stem from interactions of atoms, molecules, and ions. . .

The study of chemistry involves the study of the nature of matter--its composition, structure, properties, and interactions. Chemistry is frequently called the central science because all materials, whether animate or inanimate, are made of chemical elements. Hence, chemistry is at the heart of all scientific investigations, from the development of new medical treatments to the preparation of new superconductors. Chemistry is uniquely able to provide the fundamental understanding required to deal with societal needs, including feeding, clothing, and sheltering the world's people; tapping new sources of energy; providing renewable substitutes for scarce materials; improving health and conquering disease; strengthening national security; and monitoring and protecting our environment.

What you can do with a degree in Chemistry. . .

Our graduates are employed as industrial chemists, college professors, teachers in secondary education, etc. Many have gone on to further education; we also have graduates who have become MD's. One of our grads is Director of the largest and most diversified agricultural research complex in the world.

Getting in. . .

There are no specific admission requirements for a major in chemistry.

Program Options. . .

UND Chemistry offers 3 options. The track culminating in a B.S. in Chemistry is American Chemical Society (ACS) approved and prepares a student for graduate studies in chemistry or a position as an industrial chemist. The Biochemistry option of the B.S. with Major in Chemistry track positions a student for medical school or graduate studies in biochemistry. The Physical Science option of the B.S. with Major in Chemistry track prepares a student for graduate studies in interdisciplinary areas such as material science or nanotechnology or for secondary school teaching of chemistry.

Unique characteristics of UND's Chemistry program. . .

UND Chemistry provides its upper division students with excellent student to teacher ratios that facilitate learning and allows access by undergraduate students to state-of-the-art research instrumentation. The department strongly encourages undergraduate research. UND Chemistry is known for its research expertise at the interface of biological and environmental chemistry and in catalysis, and more specifically in energy related research. High Performance Computing is an important expertise.

Chemistry is SMART Grant Eligible. . .

Students majoring in this field may be eligible for \$4,000 to help cover costs for the third and fourth year at UND! U.S. citizens eligible for a Pell Grant, enrolled full time as 3rd or 4th year Chemistry majors, may be eligible for this new grant program. Specific eligibility rules apply. For more details about UND's administration of the federal S.M.A.R.T. grant and a UND listing of other "SMART-eligible" programs, visit www.financialaid.und.edu.

In Addition . .

- The Chemistry Department faculty is engaged in nationally and internationally recognized research; in the past year, 13 of the 15 faculty had publications in peer-reviewed journals. Our entire faculty, except one, taught an undergraduate class last year. So, undergraduates taking chemistry courses at UND have instructors who are engaged in cutting edge research and are able to relate the material in undergraduate courses to issues of national and global importance. This leads to interesting, vibrant, and relevant undergraduate courses.
- The Chemistry Department continues to increase the amount of nationally recognized research that is performed by its faculty and students. Last year, there were 22 publications in peer-reviewed journals that are distributed to libraries globally. This is a strong record of successful research and is one of the factors contributing to the \$5M in active grants in the department last year. Because of its reputation, the department has faculty members, postdoctoral research associates, or graduate students from four of the six inhabited continents.

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Chemistry continued. . .

In Addition continued. . .

- The Chemistry Department values research at all levels and is proud of its continuing commitment to undergraduate research. This excellence in undergraduate research can be seen in the many ways; the department has received nearly continuous funding from the National Science Foundation (NSF) as a Research Experience for Undergraduate (REU), or its predecessor Undergraduate Research Program (URP), for nearly 15 years. These highly competitive grants are given to departments that have proven strong research programs and a proven commitment to engaging undergraduates. Both UND undergraduates and undergraduates from other schools participate in this program in the summer. In addition, UND undergraduates have the opportunity of performing research with faculty during the year. All of our undergraduates who follow the ACS certified track do some research and many of the undergraduates in the Physical Science or Biochemistry Option tracks do research as well. All of our research-active faculty welcome undergraduates in their laboratories. Eight of last year's 22 publications had at least one undergraduate student author.
- In addition to the opportunities for research available to undergraduates, the department in general promotes a personalized experience for students. For example, students keep the same advisor throughout their studies; since all faculty are involved with advising, each faculty member has approximately 5 advisees. Students and advisors become well acquainted. Enrollment in courses taken in junior and senior years is approximately 20 students. This promotes dialog between faculty and students, in addition to learning from lectures. Moreover, we have specialized introductory courses for Chemistry and Chemical Engineering majors that are much smaller than the usual first-year lecture courses.
- UND Chemistry provides high quality instruction to its students. On American Chemical Society standardized exams, median scores after the first year are at the national average. However, at the end of the second year, the UND median is at approximately the 70th percentile nationally. The UND median remains at comparably high levels through the remainder of the undergraduate studies. This type of background allows our students to compete for positions in the most prestigious graduate schools. A Summer 2007 graduate who took a combined BS/MS and did undergraduate research was accepted into the graduate program at the University of California, Berkeley--is rated as the nation's best graduate program in Chemistry.
- The Chemistry Department was awarded the UND Award for Departmental Excellence in Research last year.

It's A Fact. . .

- The department has modern chemistry instrumentation (NMR, MS, FTIR, etc.) and excellent computer facilities (approximately three dozen workstations or servers and approximately 100 PCs).
- One or two outstanding undergraduates in each class each year receive recognition that carries a financial award of up to \$1000.
- Lab fees are \$5 to \$20 per lab class.
- The 5-year combined M.S./B.S. degree is a powerful and convenient option for students. It allows rapid progress in graduate school and provides an advantage when applying for medical school.
- Average class size for courses in major: Upper division: lecture course, 23; lab course: 13. Lower division: lecture: 144; lab: 20.
- There are 15 faculty in the department
- There are 75 students enrolled in the major.
- Chemistry was first offered as a major at UND in 1910.
- The Undergraduate Chemistry Club and Chemistry Graduate Student Association are active on campus.
- The American Chemical Society certifies the B.S. in Chemistry option. The other two options that lead to a B.S. with a Major in Chemistry have most of their courses in common with the courses in the B.S. in Chemistry track. ACS certification is being sought for the Biochemistry option.
- The department has external funding from the NSF, DOE, USDA, NIH, and the Department of Education. Many of the external grants can be used to financially support undergraduate students engaged in research.
- The University of North Dakota is offering more online courses and degree programs than ever before to provide you with additional flexibility. Please visit www.distance.und.edu for more information or call toll free at 800-342-8230 or 701-777-3044.

For more information. . .

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