



"Centre's chemistry professors are overwhelmingly knowledgeable, enthusiastic, and eager to help students learn. Students are constantly being challenged to expand the limits of their understanding to novel, real-world problems and applications."

BECKY AGARD
Centre Class of 2016
Chemistry Major

A BUMPER STICKER FROM A SOCIETY OF ENVIRONMENTAL TOXICOLOGY AND CHEMISTRY CONFERENCE ASKS, "WHAT IN THE WORLD ISN'T CHEMISTRY?" IT IS DIFFICULT TO ARGUE AGAINST THIS QUESTION — CHEMISTRY IS EVERYWHERE! IT IS THIS ABILITY TO EXPLAIN THE MACROSCOPIC WORLD IN TERMS OF ATOMS AND MOLECULES THAT PROVIDES THE EXCITEMENT AND RICHNESS OF STUDYING CHEMISTRY. NOT ONLY DOES CHEMISTRY SEEK ANSWERS TO QUESTIONS OF EVERYDAY PHENOMENA, SUCH AS, "WHY DO NONSTICK PANS WORK?" BUT CHEMISTRY ALSO UNDERLIES MANY OTHER FIELDS LIKE FORENSIC SCIENCE AND ART CONSERVATION AND CAN HELP ANSWER QUESTIONS SUCH AS "WHY DOES VAN GOGH'S YELLOW PAINT TURN BROWN OVER TIME?"

THE PROGRAM

In an increasingly technical society, a solid understanding of the principles that describe nature is important for everyone, and the fundamental principles of chemistry are important to all other areas of science. Centre's chemistry program strives to (1) support the basic general education courses taken by all Centre students, (2) provide solid background to students pursuing majors in other science and engineering disciplines, and certainly, (3) develop the intellectual skills and scientific background of those students preparing for a career in what is known as the central science.

THE CURRICULUM

Centre's chemistry program is certified by the American Chemical Society. The foundation course work offered by our program include two terms of general chemistry, and courses in the five major areas of chemistry including analytical chemistry, biochemistry, inorganic chemistry, organic chemistry, and physical chemistry. Additionally, the department offers a number of advanced, special-topics courses including the chemistry of alcohol, environmental chemistry, metals and medicine, molecular modernism, cheminformatics, physical organic chemistry, and polymer chemistry. Students can also choose to complement their chemistry backgrounds with courses in biochemistry, chemical physics, and environmental studies. Seniors complete their chemistry major with a senior seminar that focuses on current research topics.

Three chemistry degree options are available at Centre. In addition to the basic chemistry major, two additional options are certified by the American Chemical Society: a degree with emphasis in chemistry and one with emphasis in biochemistry. Each requires additional courses and collaborative research to reach a specified total of lecture and laboratory hours. Students completing these degrees are eligible for membership in the ACS immediately upon graduation. Many students major in chemistry as preparation for careers in research, medicine, dentistry, and pharmacy. Our course offerings at the advanced level offer plenty of flexibility for students to tailor their course selections in those directions.

RESEARCH AND INTERNSHIPS

Though the majority of a student's learning experiences occur in the traditional sorts of courses and the laboratories associated with those courses, the chemistry department feels strongly that a student's education is strengthened by involvement in open-ended, independent learning experiences. For that reason, we encourage our chemistry majors to become involved in collaborative research projects with our faculty. Depending upon the student's schedule and interests, these research projects are sometimes performed during the school year (for academic credit) or during the summer (with a stipend and housing allowance). Students present the results of their work at scientific meetings and contribute to publications in scientific journals. Some of the ongoing faculty research projects in which students participate include the synthesis of new metal organic frameworks, activation of small molecules by transition metal complexes, photochemical changes in artists' materials, the development of peptide-linked metals chelators for the treatment of disease, electronic properties of confined atoms, in silico and in vitro structure-based drug design to discover antibiotics, and trace-level analyses of environmental, forensic, and nutritional samples.

FACILITIES

Centre has state-of-the-art facilities for teaching and research which are located in Olin Hall and Young Hall. Centre received major funding from the Kresge Foundation that has facilitated a major upgrade and improvement of science instrumentation. Our undergraduates have hands-on experience with equipment that is usually only available to graduate students at research universities. Specifically, we have spectrometers including 300 MHz nuclear-magnetic-resonance, UV-Vis, infrared, Raman, X-ray fluorescence, atomic absorption, and fluorescence; liquid and gas chromatographs; thermal and electrochemical analysis instruments; a gas chromatograph/mass spectrometer; short-pulsed laser systems; and a variety of specialized equipment for chemical syntheses.

OUR STUDENTS

Historically, Centre has averaged about 10 chemistry majors and about half that number of minors per year. Usually, about a third go on to graduate school, about a third go to medical or other professional schools, and the balance enter directly into careers in chemistry or other technical fields. In the past several years, the graduate schools selected by our students have included Duke, University of North Carolina-Chapel Hill, University of Wisconsin, University of Southern California, Ohio State, Caltech, University of Chicago, Michigan State, University of Colorado, Northwestern, Texas A&M, and Georgia Tech.

Centre science majors won Goldwater Fellowships six times in the past decade or so, and a chemistry major won a prestigious Marshall Sherfield Fellowship.

FACULTY

LEONARD DEMORANVILLE (B.S., Eastern Nazarene College; Ph.D., University of Maryland), analytical chemistry.

JEFF FIEBERG (B.S., Centre College; M.S., University of Illinois; Ph.D., University of Texas), physical chemistry.

KRISTEN FULFER (B.A., Texas State University; Ph.D., Louisiana State University), physical chemistry.

JANUARY HAILE (B.S., Emory & Henry College; Ph.D., Virginia Tech), biochemistry.

PRESTON MILES (B.A., Centre College; Ph.D., University of Kentucky), analytical chemistry.

JENNIFER MUZYKA (B.S., University of Dallas; Ph.D., University of Texas), organic chemistry.

KERRY PAUMI (B.S., Gettysburg College; Ph.D., Wake Forest University), organic chemistry.

DANIEL SCOTT (B.S., Georgetown College; Ph.D., University of Kentucky), bioanalytical chemistry.

ERIN WACHTER (B.S., Saint Vincent College; Ph.D., University of Kentucky), inorganic chemistry.

JOE WORKMAN (B.S., Santa Clara University; Ph.D., Carnegie Mellon University), organic and inorganic chemistry, geochemistry.

KARI YOUNG (B.A., Tulsa University; Ph.D., Yale University), inorganic chemistry.

VISIT CENTRE

The best way to judge Centre is to tour the campus, talk to the professors and students, attend a class, and spend the night in a residence hall. We invite you to visit and encourage you to contact the Admission Office if you have any questions.

FOR FURTHER INFORMATION ABOUT THE CHEMISTRY PROGRAM AT CENTRE, CONTACT:

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TO COMMUNICATE DIRECTLY WITH A CENTRE STUDENT MAJORING IN CHEMISTRY, CONTACT:

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CHEMISTRY WEB PAGE

www.centre.edu/academics/majors-minors/chemistry