

{ Chemistry }

» MATTERS OF SUBSTANCE

Concordia University's chemistry program has an excellent track-record in preparing students for graduate school and careers in science. Our graduates work in chemical analysis, industrial chemistry, and laboratory management. Others have gone into research careers in chemical engineering and environmental chemistry. We also have a highly-respected program for junior and senior high school chemistry teachers.

Course Spotlight – Organic Chemistry

The study of organic chemistry has a large variety and range of applications. Gain a deeper understanding for the basics of life processes and learn how organic chemistry works. Make biofuels from garbage and perfumes from nature. Learn the chemical basis of fermentation, food products, and pharmaceuticals.

Concordia University's approach will help you develop an in-depth understanding of the basic organic compounds; their properties, reactions, and use. We place special emphasis on studying hydrocarbons, alkyl halides, alcohols, esters, epoxides, alkenes, and alkynes. Extensive opportunities to do lab work will sharpen your research skills and ability to communicate findings.

Faculty Profile – Michael Godsey

ASSISTANT PROFESSOR

The academic journey of Michael Godsey, Ph.D. began on the Concordia University Portland campus. He graduated from CU in 1992 and began teaching middle school. His love of science and research compelled him to pursue advanced studies, culminating with a Ph.D. in biochemistry from Oregon Health and Science University in 2001. He conducted post-doctoral research at the University of Illinois in Chicago and served as a consultant for the Midwest Center for Structural Genomics at Northwestern. Michael joined the Concordia University Portland faculty in 2005.



Michael studies the structure of proteins to help solve some of the most important medical problems of our time such as curing cancer. He loves how chemistry applies to both the most basic elements of our world and the most complex, "The same rules apply for simple two-atom molecules and for the molecules such as proteins and DNA which contain sometimes millions of atoms. My favorite part of biochemistry is trying to understand how all the atoms fit together and work together to make life possible. The molecular intricacy of even the simplest system is complex beyond all our understanding."

His work with Concordia University students on a food poisoning pathogen was recently published in the journal *Protein Science*. For Michael, teaching is a way to continue to learn more about life at the molecular level, "I have learned so much about so many different, fascinating systems. I enjoy the times when students start to share my enthusiasm."

Why a Concordia University Chemistry Degree?

1. Experience personal interactions with chemistry faculty members
2. Enjoy the unique opportunity to tailor your studies to fit your interests and ambitions
3. Practice hands-on opportunities with the many chemical companies and environmental firms located in the Portland area

Sample Curriculum

The following is a sampling of the many classes that have recently been offered in our curriculum –

CHEMISTRY FOR LIFE

Investigate areas of everyday life in which chemistry plays an important role with a strong emphasis on applications to health care.

PRINCIPLES OF ORGANIC AND BIOCHEMISTRY

Study the chemistry of organic molecules and the chemical reactions of living organisms.

INORGANIC CHEMISTRY

Investigate atomic structure, stoichiometry, chemical bonding, the periodic table, and states of matter. Then study thermodynamics, reaction rates, chemical equilibrium, acid-base equilibrium, electrochemistry, transition elements, and nuclear chemistry.

ENVIRONMENTAL CHEMISTRY

Use a laboratory approach to study the chemistry of water resources, pollution and treatment, oil spills, solid waste disposal, hazardous chemicals and pesticides, stratospheric ozone, greenhouse gases, photochemical smog, particulates, acid rain, trace metals, and nuclear waste disposal.

TOXICOLOGY AND RISK ASSESSMENT

Learn how to use toxicology and risk assessment to manage hazardous substances.

ORGANIC CHEMISTRY

Learn the chemistry of carbon compounds, emphasizing the nomenclature, structure, properties, reaction mechanisms, and synthesis of hydrocarbons and haloalkanes. Then study the nomenclature, structure, properties, reaction mechanisms and synthesis of alcohols, aromatic compounds, esters and carbonyl compounds.

BIOCHEMISTRY

Review the structure and function of biomolecules with an emphasis on protein structure and protein synthesis. Then examine the structure and function of lipids and nucleic acids as well as the biochemistry of nitrogen-containing compounds including nitrogen fixation and the urea cycle.

PHYSICAL CHEMISTRY

Study atomic and molecular properties including thermodynamics, chemical kinetics, macroscopic chemical systems, and molecular spectroscopy.

Next Step

Would you like to learn more about mastering the intricacies of chemistry? Contact the Concordia University Office of Admission at –

800-321-9371 503-280-8501 admissions@cu-portland.edu



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