Is Computational Chemistry and Biochemistry Right for You?

Would you like to use computer simulation and modeling, plus big data analytics, to better understand chemical and biochemical processes, to pave the way for innovations to address problems in human health, climate change, environmental protection, and more? If this sounds intriguing to you, take a look at this degree program.

What Makes This Program Unique?

• You will build a strong foundation in traditional chemistry and then develop sound knowledge and practical skills to earn a B.S. in this specialized program.

• You will learn chemical and molecular modeling and simulation, computational chemical biology, computational drug design, Big Data in chemistry and biochemistry, and computational methods for data analytics.

• It is the only comprehensive computer-related chemistry and biochemistry degree program in the United States.

• Earn a B.S. degree in computational chemistry and biochemistry plus have an option to get a B.S. degree in chemistry.

What Is Computational Chemistry and Biochemistry?

Computational chemistry and biochemistry is the application of computational methods to understand chemical and biochemical properties and processes. It is an exciting field at the interface of computer science, mathematics, biochemistry, chemistry, physics, and medicine.

Learn skills in chemical and biochemical modeling and informatics, big data analytics, and programming that employers need.

Program Benefits

• Provides a strong educational background and specialized skills in chemical and biochemical modeling and simulation and big data analytics.

• Teaches you programming and informatics and database management techniques that are in demand by employers.

• Prepares you to be a viable candidate for professional positions in biomedical, biotech, pharmaceutical, or medical companies or government labs.

Illinois Tech’s new chemistry majors allow you to build a strong foundation in chemistry, and then individualize your study to be competitive for specific career paths.

The new majors include bioanalytical chemistry, computational chemistry and biochemistry, environmental chemistry, forensic chemistry, and medicinal chemistry.

The new B.S. programs are highlighted in a recent issue of Chemical & Engineering News, a magazine published by the American Chemical Society: https://goo.gl/zmXs55
Undergraduate Research Opportunities
Students may conduct research under the direction of chemistry faculty working on cutting-edge medicinal and pharmaceutical chemistry, including:

• Computational modeling of bioorganic, biochemical, magnetic, and organometallic systems (Professor Andrey Rogachev)
• Simulation and docking of proteins and enzymes, targets for therapeutic drugs (Professor David Minh)
• Development of computational methods to predict protein-drug interactions (Professor David Minh)

Career Pathways
• Work in a computational modeling and informatics group for drug discovery in the pharmaceutical industry.
• Become a data analyst in government or academia, the private sector, a medical institute, or a research organization.
• Work as a medical marketing analyst in healthcare or the biotech, biopharmaceutical, or pharmaceutical industry.
• Pursue graduate studies in chemistry, biochemistry, data science, statistics, or computer science and earn M.S. or Ph.D degrees.

Internship and Scholarship Opportunities
Students in the program are encouraged to apply for internship and scholarship programs in academia, industry, and government, including:

• National Institute of Standards and Technology (NIST) Summer Undergraduate Research Fellowship
• Research Experience for Undergraduates (REU) program, National Science Foundation (NSF)
• Summer Internship Program in Biomedical Research (SIP), National Institutes of Health (NIH)
• NIH Undergraduate Scholarship Program
• Summer Oak Ridge Institute for Science and Education (ORISE) Fellowships, Centers for Disease Control and Prevention (CDC)
• Society of Chemical Industry (SCI) Scholars Internship program
• American Chemistry Society (ACS) Scholarship Program for African American, Hispanic, and American Indian students
• ACS Project SEED Scholarship
• Kilpatrick Undergraduate Scholarship, Chemistry Department, Illinois Tech
• Undergraduate Summer Research Stipend, College of Science, Illinois Tech

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