

Cutting-Edge Programs, Smart People, Cool Research

Your Future at Illinois Tech



CHEMISTRY

Illinois Tech is a small, private university that educates students to go on to do big things. For graduates of our **Department of Chemistry**, this has included leading an experimental group at Lawrence Livermore National Laboratory, directing a new initiative on the environment at Massachusetts Institute of Technology, and much more.

What does this mean for you? You'll experience the same **easy access to chemistry professors, allowing for research opportunities, letters of recommendation, and connections in the field**. Illinois Tech's rigorous degree programs are diverse, customized, and area-focused. You will get into the lab with your professors and **put chemistry to work**, going beyond the traditional discipline as you gain advanced training in high-value and emerging areas such as computational modeling and big data. Innovate, experiment, and gain relevant experience while benefiting from the research capacity of a major league research institution.

CHEMISTRY B.S. DEGREES AT ILLINOIS TECH

Illinois Tech's competitive, accredited chemistry program offers you a distinctive education and advanced training in relevant and in-demand chemistry fields. This includes a number of first-of-its-kind B.S. degrees. Receive your bachelor's degree in a chemistry specialization that is of greatest interest to you.

- B.S. in Bioanalytical Chemistry
- B.S. in Chemistry
- B.S. in Computational Chemistry and Biochemistry
- B.S. in Environmental Chemistry
- B.S. in Forensic Chemistry
- B.S. in Medicinal Chemistry
- Pre-Medicine and Pharmacy Concentrations and Dual Admissions Programs
- Honors Law

RESEARCH—EVEN AS AN UNDERGRAD!



Chemistry undergraduates at Illinois Tech get the opportunity to work on major research right from the start. We also offer **\$5,000 Undergraduate Summer Research scholarships** to select students.

RESEARCH SCHOLARSHIPS:
Learn more at science.iit.edu/chemistry/hands



Our Chemistry Programs

BIOANALYTICAL CHEMISTRY

This signature program is right for you if you are interested in analysis and detection of biologically active small molecules and biomolecules including protein, DNA, enzyme, and antibody using chemical and biochemical methods. Bioanalytical chemistry is a key discipline in biomedical research and is applied to a study of biological processes, detection of human diseases, and preclinical and clinical trials of small drugs and biopharmaceutical products. Illinois Tech is the **first university in the country to offer a bioanalytical chemistry B.S. program**. Our program provides you with an interdisciplinary background in bioanalytical theories and methods, and applications of analytical chemistry for detection, characterization, and quantification of biological systems. You'll receive a rigorous education in traditional chemistry areas and the requisite knowledge and technical skills to develop your own competitive career path in the field of bioanalysis, biomedical, clinical, and pharmaceutical science.

COMPUTATIONAL CHEMISTRY AND BIOCHEMISTRY

In this B.S. program you will experience computational modeling and big data in chemistry. You'll study chemical and molecular modeling and simulation, computational chemical biology, computational drug design, and computational methods for data analytics. The program is designed to prepare you to advance in the rapidly growing fields of computational and data science, offering you a strong background in traditional chemistry areas combined with relevant and advanced skills in experimental and computational science. Illinois Tech is the **only university to offer a comprehensive computer-related program with course requirements covering chemical and biochemical science, computational techniques, and data science**.

ENVIRONMENTAL CHEMISTRY

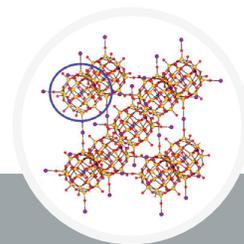
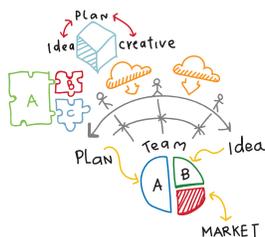
In this discipline you will learn and discover chemical solutions to environmental issues: environmental protection and remediation, energy, green chemistry, environmental analytical chemistry, and more. The **only program of its kind in the Chicago area**, Illinois Tech's environmental chemistry B.S. program offers you a rigorous education in traditional chemistry paired with a fundamental interdisciplinary background in chemical applications to environmental problems. You will gain the advanced skills necessary to develop a career in the field of atmospheric and environmental science, environmental analytical chemistry, or environmental health science.

FORENSIC CHEMISTRY

The forensic chemistry degree prepares you to build a career in forensic investigation, forensic medicine, and forensic drug analysis. Illinois Tech is the **only university in the Chicago area to offer a B.S. program in forensic chemistry**. Our program will provide you with a strong background in both traditional chemistry areas and chemical applications for analysis, detection, and characterization of forensic and controlled substances. You'll gain systematic training in chemical science and chemical and instrumental analysis, which will prepare you to develop a career in forensic science, forensic toxicology and DNA analysis, or criminalistics.

MEDICINAL CHEMISTRY

In this specialized area of chemistry you will learn to apply chemical science to drug design and discovery for the detection and cure of human diseases. The **only program of its kind in Illinois, and one of only a handful in the country**, Illinois Tech's medicinal chemistry B.S. program will provide you with a sound interdisciplinary understanding of drug action and drug design. Our program offers you a strong background in traditional chemistry areas and the technical skills required to advance in your career, whether in the biomedical, medical, or pharmaceutical field.



RESEARCH ON THE EDGE

Our faculty are pushing the boundaries of what we know in many areas, including:

- **Energy:** Catalysis for solar energy conversion, sustainable chemical synthesis, and functional materials for energy storage and harvesting beyond lithium-ion batteries (*Jean-Luc Ayitou, Adam Hock, Ishaque Khan, Braja Mandal*)
- **Computational Science and Big Data in Chemistry:** Computational simulation and drug design, data analysis, and computational modeling of bioorganic, biochemical, magnetic, and organometallic systems (*David Minh, Andrey Rogachev*)
- **Environment and Forensics:** Biosensors for bioterrorism, environmental toxins, DNAs, and proteins; environmental remediation; green chemistry and photocatalysis (*Jean-Luc Ayitou, Joy Chong, Richard Guan*)
- **Bioanalysis and Health:** Computational analysis of protein-drug interaction, discovery of small anti-cancer agents and antibody drug conjugates, microscopic analysis of biomaterials and cellular interactions, molecular targeted radiotherapy and radioimaging (*Joy Chong, David Minh, Rong Wang*)

Chemistry Professor Joy Chong conducts interdisciplinary research projects aimed at developing safe, effective, and targeted drugs for cancer and neurodegenerative diseases. Her lab has developed several promising cancer therapeutic and diagnostic agents with successful preclinical profiles that are favorably compared to the existing anti-cancer drugs.



LEARN TO INNOVATE IN IPROS

In Illinois Tech's signature Interprofessional Projects (IPRO) Program, you'll work with students from various majors to solve real-world problems. Recent chemistry-oriented IPROs include:

- Terraforming urban soils and use of appropriate food process technologies
- Simulating and visualizing molecules moving through biological nanopore sensors
- Developing a new strategy to search for smuggled nuclear material
- Fabrication and commercialization of high-power lithium-ion batteries



Preparing for Your Future

"I have my exceptional education and the letters of recommendation from professors to thank for my acceptance into pharmacy school and my postdoctoral fellowship. Every door in my academic and professional career has been opened thanks to the professors at Illinois Tech."

—Emily Mick (Chemistry '10)

Emily received her Pharm.D. from the University of Illinois at Chicago, worked for AbbVie, and is currently a postdoctoral fellow with the University of North Carolina and IQVIA in the area of pharmacokinetics.

HANDS-ON CHEMISTRY



"The education I received as an Illinois Tech chemistry major directly helped me with my coursework, especially in topics such as biochemistry and pharmacology. Knowing the chemistry behind the reactions we learned may not be essential to a clinician, but it gives me a better understanding of what is happening in the body, it taught me how to think analytically, and it gives me insight into why certain medical decisions are made."

— **Kamil Bober** (CHEM '12), Camras scholar, Northwestern University Medical School



"The research-oriented education that I received from Illinois Tech enabled me to make an immediate impact in graduate school and to stand out from my peers."

— **Ryan McClure** (Chemistry '11)
Graduate of the Northwestern University Ph.D. program,
Senior Scientist at AbbVie

STAND OUT.

Our graduates are far from ordinary.
But we expect them to be extraordinary.



Susan Solomon (Chemistry '77)—Co-chair of the Intergovernmental Panel on Climate Change, which received the 2007 Nobel Peace Prize



Vincent Rotello (Chemistry '85)—Professor in Chemistry at the University of Massachusetts Amherst, where he researches sensors, materials, and drug delivery



Giang Vo (Chemistry '05)—Senior research investigator at DuPont, where he is conducting research used in displays, lighting, and smart materials applications