

Chemical Biology

BACHELOR OF SCIENCE IN

Biology is not just for biologists anymore: chemists have crossed over into the field. Chemical biologists are at the forefront of many of the latest advances in science today. Their work touches nearly every aspect of our lives, including agriculture, biotechnology, and healthcare. They have analyzed DNA traces found during crime scene investigations, formulated insulin and other life-saving medicines, and have even designed yeast-based biosensors that sniff out explosives. There is an increasing need for scientists and technicians who are well versed in both biology and chemistry.



This dual knowledge — chemical biology — constitutes an emerging discipline that lies at the very core of the biotechnology industry.

Lawrence Technological University's Bachelor of Science in Chemical Biology responds to the growing demand for skilled scientists in the biomedical and biotechnology fields. It is designed to prepare you to enter this field with a strong background in both disciplines and a full appreciation of their interdependence.

The state of Michigan is devoting considerable resources to the development of a life sciences and biotechnology infrastructure. MichBio, a consortium of about 100 companies and educational institutions, has been established to facilitate the growth of biotechnology opportunities in Michigan. Lawrence Tech is an integral part of this effort and a member of MichBio.

While specialized training in chemical biology has been available at the graduate level for several decades, the chemical

biology undergraduate program at Lawrence Tech is the first in the Midwest and one of only a handful in the United States. With the completion of several genome-sequencing projects, a new era of biology has emerged in which biomedical research and DNA and drug screening is routinely conducted at a scale that is several orders of magnitude larger than before. This trend has dramatically increased the demand for scientists who are knowledgeable in both chemistry and biology. Lawrence Tech's Bachelor of Science in Chemical Biology was created to meet this urgent need.

Changing Lives

A recent development in the production of flu vaccines demonstrates the importance of chemical biology. Since the 1950s, vaccines have been produced using viral growth in embryonated hen's eggs — a method that currently produces 300 million doses per year. However, it takes three to six months to develop a vaccine that is effective

CURRICULUM

Your 126-credit-hour program consists of:

Chemistry, including Biochemistry	40 – 46
Biology	22 – 28
Mathematics, including Calculus and Statistics	15
Physics	8
Humanities (with emphasis on leadership)	29
Electives	6
Total	126

against a new strain of flu virus and this rate of turnover is too slow to deal with a pandemic flu outbreak.

In 2005, exploring chemistry to solve a biological problem, chemical biologists used caterpillars to develop a genetically engineered flu vaccine. Studies have shown this caterpillar flu vaccine to be more effective than the traditional vaccine. Furthermore, the rate of turnover is rapid – one to two months – and 900 million doses per year can be produced, which is enough to treat a pandemic. This is one of the many examples of how breakthroughs in the field of chemical biology are changing our lives for the better.



Why Chemical Biology at Lawrence Tech?

Lawrence Tech has successfully educated scientists for over 75 years. Chemical biology builds on the University's strengths to give you an advantage over more traditional programs. The program is characterized by:

- Broad basic training in the parent disciplines
- A coherent integration of fundamental and advanced concepts throughout the curriculum
- Small classes and close contact with faculty
- Extensive laboratory experience that extends and complements the ideas developed in lectures
- Co-op and internship opportunities in the industry
- Comprehensive use of information technology capabilities
- Teamwork and the development of communication skills

Your Future

The chemical biology program aims to prepare you for entry-level scientific careers in a variety of disciplines. The breadth and depth of your training also gives you the option to pursue graduate work in such fields as biochemistry, bioinformatics, cell biology, chemical biology, immunology, medicinal chemistry, molecular biology, molecular genetics, neurobiology, pharmacology, and public health.

This program can be especially useful if you are preparing for advanced degrees in the health professions, including dentistry, medicine, veterinary science, optometry, and pharmacy.

Getting Started

For more information, visit ltu.edu/arts_sciences/chemical_biology or contact Lawrence Tech's Office of Admissions at 800.CALL.LTU or admissions@ltu.edu.

Graduates with a degree in Chemical Biology have many career options:

- Biotechnology
- Forensic science
- Medical technology
- Medicine
- Molecular cell biology
- Pharmaceuticals
- Research and development

GET MORE. DO MORE.

Lawrence Technological University produces leaders with an entrepreneurial spirit and a global view. That's why most Lawrence Tech students are employed within a month of graduating. Your benefits:

- Leadership Program that helps you develop the marketable skills that employers seek
- Leadership Portfolio that enhances your diploma – and your resume
- 12:1 student-faculty ratio
- Faculty with current industry experience
- Fully loaded high-powered laptop or tablet computer provided
- Schedules that work for you, with convenient day, evening, weekend, or online classes
- Hi-tech, wireless 102-acre campus that's commuter friendly, with recreation, housing, and meal service options
- Financial-aid, co-op, and internship opportunities
- Proactive career placement services

Explore over 80 undergraduate, master's, and doctoral programs in Colleges of Architecture and Design, Arts and Sciences, Engineering, and Management.