Biomedical Engineering
MASTER OF SCIENCE DEGREE PROGRAMS
UIC offers a master’s degree in biomedical engineering that is designed to prepare you for a wide range of career paths in the biomedical field.

This degree fosters entrepreneurship across the different fields of biomedical engineering—an outlook that is useful whether you want to start a company or just bring the most creative, innovative ideas to the institution where you work.

Our master of science programs can be completed in two ways:

**Thesis Option**
In conjunction with your coursework, the thesis option, available for either biomedical engineering or bioinformatics, pairs you with a faculty mentor and gives you the opportunity to write an original research-based thesis on a topic that interests you. Students have found that the specialization of a thesis makes them more marketable to employers. Thesis experience also is ideal for students who might want to continue on for doctoral study after the MS.

**Coursework Option**
The coursework-only option, also available for either biomedical engineering or bioinformatics, allows you to complete all the credits toward your MS degree through our comprehensive selection of courses, which are taught by innovators and leaders in the field.

### UIC’s Academic Strengths

**Medical Devices:**
- Cell and Tissue Engineering
- Neural Engineering
- Medical Imaging

**Medical-Industry Skills:**
- Medical Technology Assessment
- Quality Assurance for Medical Products
- FDA and ISO Standards

### Featured Courses

**BME 525 PHYSICAL AND CELLULAR EFFECTS OF BIOMECHANICAL FORCES**
In this class, students discover how biomechanical forces are generated, the impact the forces have on cells and tissues, and methods for studying them. This course also delves into the mechanisms by which a cell may sense forces and send this information to its nucleus.

**BME 494 WEARABLES AND NEARABLES TECHNOLOGY LABORATORY**
Develop the skills needed to be part of the wearables and nearables revolution. Students combine sensors, software platforms, and Bluetooth technology to create wearable and nearable devices. An open-ended project module allows students to collaborate with a selected industry partner on a real-world problem, potentially leading to a future internship.

**BME 494 QUANTITATIVE PHYSIOLOGY**
This course teaches the fundamentals of human organ systems from a quantitative perspective, making it possible to predict physiological outcomes for health. Students are introduced to cutting-edge examples in biomedical engineering research and development, including pharmaceuticals and regenerative medicine.

### International Programs
UIC’s international partnership programs allow students from specific universities around the world to complete part of their higher education in our department, potentially culminating in an MS in Biomedical Engineering or MS in Bioinformatics from UIC.

Learn more at go.uic.edu/COEInternational.

A Step Ahead
Thanks to the strength of our curriculum and UIC’s global connections, many MS students are able to get internships that help them level up their career planning.

**Achal Gupta**
**Internship:** Tekscan Inc.
**Location:** Boston, MA
**Assignment:** Helping to make sure that products meet strict regulatory standards, including designing plans for tests and working with external labs to execute those tests
**Advantages:** Managing multiple projects, applying classroom knowledge, and being a self-starter.

**Frehiwot Woldeyes**
**Internship:** Medical Accelerator for Devices Laboratory
**Location:** Chicago, IL
**Assignment:** Developing a prototype for monitoring intracranial pressure (ICP) for patients with traumatic brain injury. Her involvement began with the development of an algorithm to interpret brain signals and evolved into building electrical models to acquire and process those signals.

Her perspective: “UC Biomedical Engineering’s course offerings are very specific to students’ areas of interest, and the department has various research labs that students can choose to engage in. In addition, students in the department are from different cultural backgrounds, which for me, an international student from Ethiopia, created a feeling of home.”
After UIC, where to?

Companies that have hired graduates of the UIC MS in Biomedical Engineering and Bioinformatics programs include:

Ab.Acus
Abbott Laboratories
AbbVie
Accenture
Air Force Research Laboratory
American Academy of Sleep Medicine
BASF
Baxter
BD
BOOM imagemstudio
CD-Adapco
CVS Health
Deloitte
Empatica
EndoTronix
Fenwall
Fresenius Kabi
Ford Motor Company
Johnson & Johnson
Intel
Level Ex
LEO Pharma
Lions of Illinois Eye Research Institute
Mayo Clinic
Medline Industries
Motorola Mobility
Neopenda
NN Life Sciences
Northwell Health
Panakes Partners
Pfizer
RefleXion Medical
Rush University Medical Center
Tempus
Truth in Accounting
University of Michigan Cardiothoracic Surgery
Washington University in St. Louis
Wyss Institute
Zimmer Biomet

Gardner Yost
Resident Physician, University of Michigan Department of Cardiothoracic Surgery

Gardner Yost’s daily tasks are familiar to any surgical resident: morning rounds, scrubbing in to at least one surgery alongside an attending physician, caring for patients on the wards, and attending lectures and simulations.

As a biomedical engineering graduate, however, Yost brings a fresh view. “The skill of thinking like an engineer—problem-solving, critical analysis, and thorough methods of developing a solution—are increasingly valued in medicine,” he said. He notices the difference in his approach: if most people’s instinct when facing a medical problem is to ask “how do we fix this now,” Yost has “a mindset that desires to solve larger issues, systems issues.”

Yost worked in collaboration with Advocate Christ Medical Center while he did his master’s degree at UIC, and he cites UIC’s connection with hospitals and healthcare groups throughout Chicago as one of the most valuable elements of the program.

Carlos Ng
Microdevice Design Research Assistant, Wyss Institute

Microfluidics—an area of incredible strength among the UIC biomedical engineering faculty—has become Carlos Ng’s area of expertise, too. Microfluidics lies at the core of what is called “lab on a chip” technology, which replicates the structure and function of living organs at microscale and could one day eliminate animal models for drug development and other research.

An “organ on a chip” is among Ng’s projects at the Wyss Institute, which is affiliated with Harvard Medical School. There, he develops microfluidics prototyping platforms, learns mass-production techniques that can be used to make microfluidics devices commercially available, and oversees a clean room research facility.

Ng’s UIC course recommendation: BME 518 Controlled Drug Delivery. Students discuss drug-delivery systems that succeeded or failed in the market, propose their own systems, and present them—mirroring the process that researchers pursue throughout their careers.

Admissions

Full details on how to apply—including requirements and deadlines—are at bme.uic.edu under the Graduate menu.

Interested in graduate study in biomedical engineering or bioinformatics at UIC? Talk to us. Contact our graduate team with questions or for an informal conversation.

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