Biomedical Engineering

MASTER OF SCIENCE DEGREE PROGRAMS

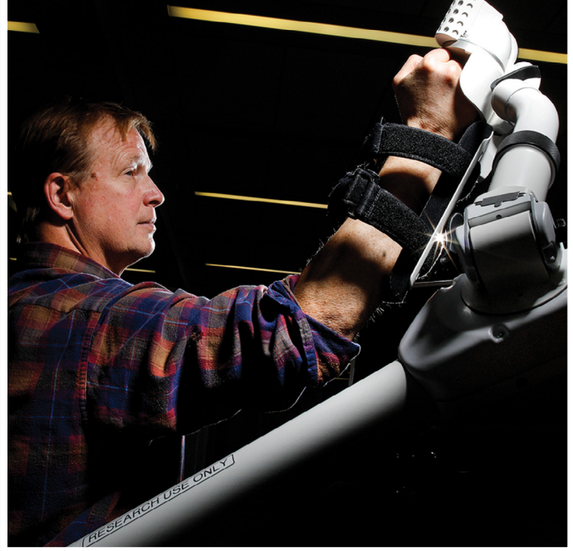
UIC ENGINEERING

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.

IDEAL FOR STUDENTS WHO SEEK RESEARCH CAREERS WITH:

- **Corporations**
- **Government Laboratories**
- **Hospitals**
- **Medical Schools**
- **Universities**



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.

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.

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

What will you take as an MS student at UIC? Explore your choices at bme.uic.edu (see the Courses page under the Graduate menu). Here are a few that have captured our current students' attention—and that have proved especially valuable in their careers after UIC.

BME 479 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 525 PHYSICALOGICAL AND CELLULAR EFFECTS OF BIOMECHANICS 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.

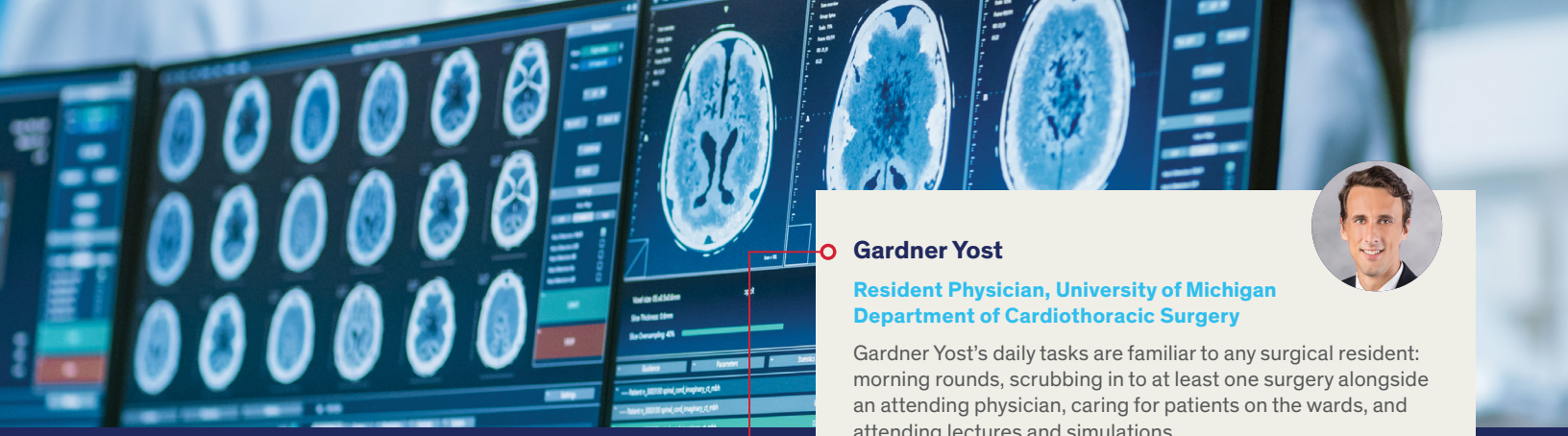
BME 542 QUANTITATIVE PHYSIOLOGY
This course teaches the fundamentals of human organ systems from a quantitative perspective, making it possible to predict physiological outcomes for healthcare. Students are introduced to cutting-edge examples in biomedical engineering research and development, including pharmaceuticals and regenerative medicine.

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
His perspective: "Bioengineering is a perfect combination of both biology and engineering. Medical-device companies are eagerly looking for candidates who have this background, as they can bridge the gaps between engineering and any other departments and provide solutions in a biology-oriented way."

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: "UIC 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 imagestudio
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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