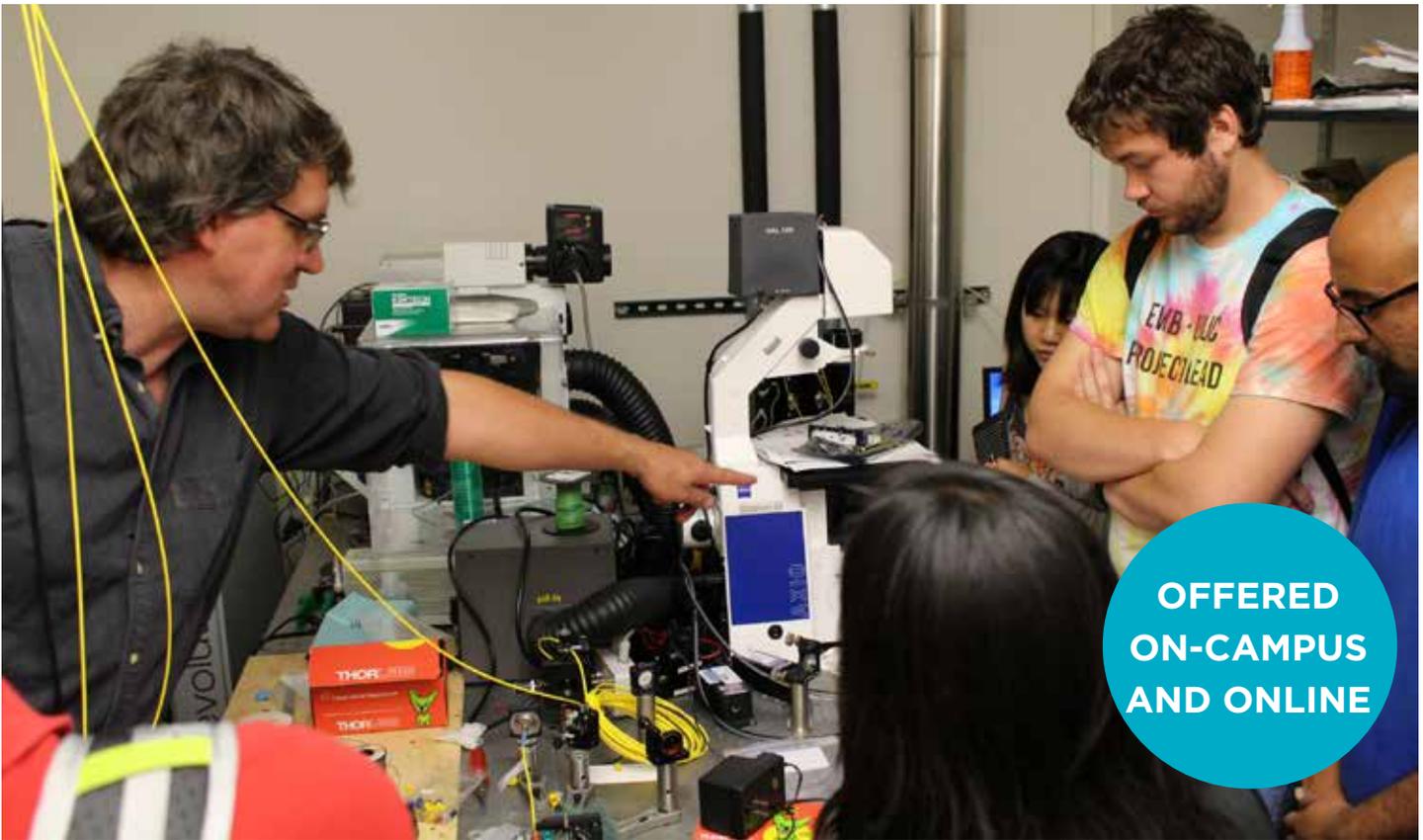




# BIOENGINEERING

PROFESSIONAL MASTER'S PROGRAM



**Designed for those looking to carve a career in industry, our program combines the strengths of the College of Engineering and the College of Business at the University of Illinois. Graduates are equipped with hard-core technical skills and big-picture business perspective - trained to find creative solutions to complex, multi-level systems problems.**

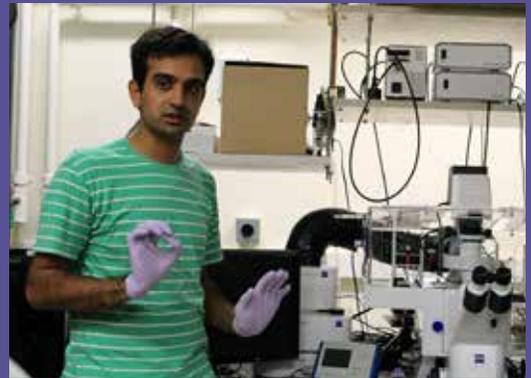
The Master of Engineering (M.Eng.) in Bioengineering is a professional, non-thesis master's degree program designed for industry-bound professionals who seek to advance their technical breadth and depth in fields related to bioengineering, while developing a fundamental understanding of key business concepts. It bridges the skills gap by delving into greater technical depth than is possible in an undergraduate program. The program is offered both as an on-campus, one-year program, as well as an online program. The online program can be completed at the student's pace or in as few as five semesters.

This rigorous program will provide students with the advanced technical knowledge in bioengineering and a core transcriptable concentration: Bioinstrumentation, Computational Genomics, and General Bioengineering.

## Bioinstrumentation

The Bioinstrumentation concentration, with special focus on medical imaging devices, trains engineers to be industry leaders by combining rigorous graduate-level engineering coursework with fundamental business training.

Students will delve into the fine points of biometric sensors, imaging technology, and life-changing clinical devices, as well as learn about intellectual property management and regulatory requirements. A culminating project will demonstrate the student's technical proficiency, and they will also gain the hands-on experience, leadership ability, and professional skills needed to be successful in their chosen career.



## Computational Genomics

The Computational Genomics concentration develops professionals who combine deep knowledge of genomic biology with strong computational skills in preparation for careers in industry, national laboratories, health care industry, medical research and practice.

Our program will provide a combination of data science education – statistical inference, data wrangling, computer algorithms and programming, machine learning, and data management – within the context of real-world biomedical problem. In addition to scientific problem-solving skills, the program will also train students to become bioinformatics professionals with business proficiency in a team-based working environment.



## General Bioengineering

As the global healthcare system is undergoing transformation driven largely by an aging population, there is greater need for technological advances in medicine and bioengineering that will provide better healthcare at a lower cost. Hiring managers also are looking for engineers who show leadership potential with an understanding of business fundamentals.

The concentration in General Bioengineering is designed to bridge this skills gap by developing students with deeper understanding of general bioengineering concepts and more business acumen through coursework and an applied consulting project. The broad range of courses offered allows for customization of the curriculum through multiple tracks that enable students to focus their experience within their field of greatest interest.



# DEGREE REQUIREMENTS

## Master of Engineering in Bioengineering

- One-year professional master's program (non-thesis and no research) designed for those looking to carve a career in healthcare industry – will be offered on-campus and online.
- 32 credit hours (24 credit hours of required core classes + 8 credit hours of electives).
- Each concentration is designed with an in-depth curriculum covering multidisciplinary technical fields that are combined to provide students with a breadth and depth of understanding in bioinstrumentation, computational genomics and general bioengineering.

### BIOINSTRUMENTATION

BIOE 570	Seminar Series	2 credit hours
BIOE 571	Biological Measurement I	4 credit hours
BIOE 572	Biological Measurement II	4 credit hours
BIOE 573	Systems Engineering	4 credit hours
BIOE 574	Finance and Innovation	4 credit hours
BIOE 575	Team Project	6 credit hours
Two electives	400- or 500-level courses	8 credit hours

### COMPUTATIONAL GENOMICS

BIOE 570	Seminar Series	2 credit hours
BIOE 582	Statistics and Algorithms in Genomic Biology	4 credit hours
BIOE 583	High-Throughput Genomics Data Analysis	4 credit hours
BIOE 573	Systems Engineering	4 credit hours
BIOE 574	Finance and Innovation	4 credit hours
BIOE 575	Team Project	6 credit hours
Two electives	400- or 500-level courses	8 credit hours

### GENERAL BIOENGINEERING

BIOE 570	Seminar Series	2 credit hours
Choice of two BIOE 400- or 500-level courses		8 credit hours
BIOE 573	Systems Engineering	4 credit hours
BIOE 574	Finance and Innovation	4 credit hours
BIOE 575	Team Project	6 credit hours
Two electives	400- or 500-level courses	8 credit hours

## TEAM BUILDING & TECHNICAL KNOW-HOW

Students in the M.Eng. in Bioengineering program will demonstrate their proficiency through a team-based design project. Project ideas are proposed by clients from industry, teaching hospitals, and clinicians seeking solutions to specific problems. Student teams assess the market and conduct competitive analysis, engineering design, software development, prototyping, testing and documentation of results. Weekly or bi-weekly update meetings with clients are essential to the success of the project. Teams are expected to self-organize their effort by assigning tasks, developing a schedule, identifying bottlenecks, and gathering resources.

Working with the clients, the teams are expected to gain insights to help them implement their idea. During the project, the teams may request guidance from program faculty and may take field trips to the client's location. Project presentations and demonstrations are delivered during a formal end-of-program event.

For examples of completed team projects, visit [bioemeng.illinois.edu](http://bioemeng.illinois.edu).

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