

DEPARTMENT OF BIOENGINEERING



Graduate Certificate in Medical Product Innovation

In conjunction with the University of Pittsburgh Center for Medical Innovation (CMI), the Department of Bioengineering offers a special Graduate Certificate in Medical Product Innovation (C-MPI).

The C-MPI is a multi-faceted program, reflecting the multidisciplinary nature of medical innovation.

The C-MPI program is coherently designed to assure mastery of specific knowledge and skills, rather than a random accumulation of a specified number of courses.

C-MPI OBJECTIVES

- To educate engineering graduate students at the MSc and PhD levels in clinical, engineering, business, and legal aspects of the medical device design and development process;
- To educate students of the health sciences (residents, fellows and clinicians) in engineering, business, and legal methodologies in identifying and developing innovative solutions to their problems;
- To educate law students in engineering methodology, regulatory constraints, medical device intellectual property, and commercialization aspects of medical innovation;
- To educate business (MBA) students in clinical, engineering, regulatory, and legal aspects of medical innovation and entrepreneurship; and
- To train all of the above disciplines in the art of working in multi-disciplinary teams to accomplish the medical innovation process, from medical technology ideation, through development, to realization and commercialization.

ENROLLMENT

Students *currently enrolled* in any graduate program in the University (MSc, MBA, JD, PhD, etc.) are eligible to obtain the C-MPI upon completion of the Certificate requirements. No formal admissions process is required for students who are currently enrolled in any type of graduate program in the University.

The distinctive educational core of the Medical Product Innovation track for the Graduate Certificate in Bioengineering is two courses.

NOTE: Students accepted in the program must comply with all Swanson School of Engineering (SSoE) requirements for access to clinical sites within the UPMC system.

In addition to the two Core Classes (6 credits), the Medical Product Innovation program requires an additional 9 credits (Medical Ethics - 3 credits, Entrepreneurship/Engineering Management - 3 credits, Legal Aspects of Medical Product Engineering - 3 credits) for a total of 15 credits.

▶ ▶ ▶ **Details of this program
can be found at
engineering.pitt.edu/cmi**

Center for Medical Innovation

The Graduate Certificate in Medical Product Innovation requires a total of 15 credits (6 credits Medical Product Innovation Core Curriculum plus 9 credits of electives)

MEDICAL PRODUCT INNOVATION

Track-Specific Courses

Medical Product Innovation Core Curriculum (6 credits)

Medical Product Innovation (6 credits)

BIOENG 2150: Medical Product Ideation (3 credits)

BIOENG 2151: Medical Product Development (3 credits)

Electives (9 credits)

Entrepreneurship/Engineering Management (3 credits)

BSEO 2531: Entrepreneurship and New Venture Initiation

BSPP 2111: Commercializing New Technologies

IE 2003: Engineering Management

IE 2039: Entrepreneurship for Engineers

IE 2076: Total Quality Management

Legal Aspects of Medical Product Engineering (3 credits)

LAW 5135: Commercializing New Technologies

LAW 5210: Patent Law

LAW 5260: Intellectual Property

LAW 5631: Law and Entrepreneurship

Medical Ethics (3 credits)

BIOENG 2241: Societal, Political, and Ethical Issues in Biotechnology

BIOETH 2661: Theoretical Foundations

BIOETH 2664: Bioethics

Typical Schedule

First Semester

BIOENG 2150: Medical Product Ideation

Elective: Entrepreneurship/Engineering Management Course*

Second Semester

BIOENG 2151: Medical Product Development

Elective: Legal Aspects of Medical Product Engineering Course*

Third Semester

Elective: Medical Ethics Course*

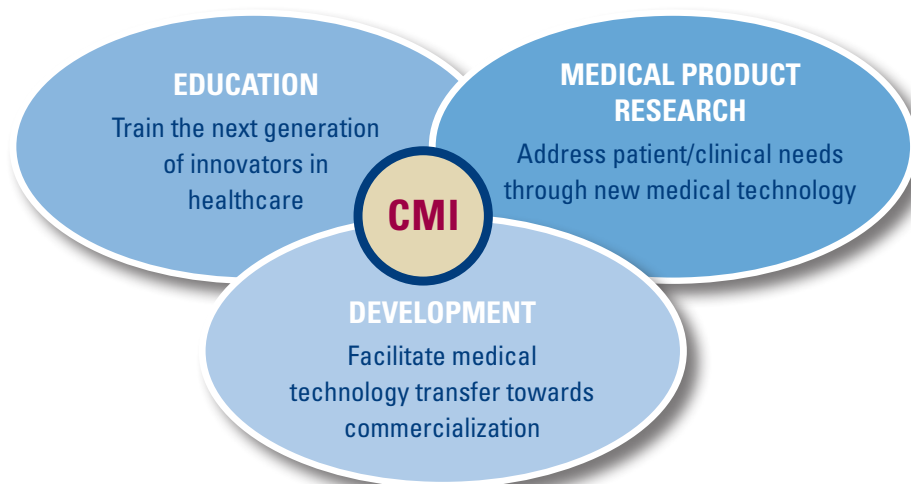
* Complete list of elective courses can be found at the CMI website (engineering.pitt.edu/cmi) and/or by contacting CMI Educational Program Director.



UNIVERSITY OF PITTSBURGH
CENTER for MEDICAL
INNOVATION

A University Center in the Swanson School of Engineering

CENTER FOR MEDICAL INNOVATION



A new interdisciplinary program within the University of Pittsburgh, whose purpose is to stimulate, guide, and promote the development and commercialization of technological innovations to improve health care. CMI provides an organizational structure that links faculty, students, and clinicians across the University of Pittsburgh through collaboration with the Swanson School of Engineering, Schools of the Health Sciences, the Katz School of Business, the School of Law, the Office of Technology Management, and the Wallace H. Coulter Foundation Translational Research Partnership II.

CMI MISSION

The mission of CMI has three essential components:

- **Research:** To provide an organizational structure to link engineering faculty, clinicians, and students at the University of Pittsburgh, and to fund early-stage development of innovative biomedical technologies.
- **Education:** To educate the next generation of innovators in the design, development, and commercialization of medical technologies through classroom and hands-on experiences in cooperation with the schools of Engineering, Health Sciences, Business, and Law.
- **Development:** To facilitate the translation of innovative biomedical technologies into marketable products, services, and business ventures in collaboration with the University of Pittsburgh Office of Technology Management and the Coulter Translational Research Partnership.

Educational Program

CMI will offer, through the Swanson School's Department of Bioengineering, two options for a Professional Master of Science degree (Medical Product Engineering track), and a new Graduate Certificate in Medical Product Innovation. Additionally, engineering graduate students may participate in courses and innovation projects as part of their dissertation work. Medical students will be able to satisfy School of Medicine research requirements through participation in CMI sponsored projects. Courses in innovation and entrepreneurship already offered through the Swanson School of Engineering, the Katz School of Business, and the School of Law will be available to all students interested in medical innovation. Multi-disciplinary student teams (including graduate students in engineering and business, as well as law and medicine) will work with engineering faculty, clinicians, and industry advisors to develop innovative medical technologies through the prototype stage.

"You can never **solve** a problem
with the same kind of **thinking**
that created the problem in the first place."

— Albert Einstein

Directors

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Center for Medical Innovation

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