BIOMEDICAL ENGINEERING (MENG)

College of Engineering

Program Website (https://www.engineering.cornell.edu/bme/meng/)

CIP: 14.0501 | **HEGIS:** 0905.00 | **NYSED:** 28557

Program Description

The Master of Engineering program in Biomedical Engineering has the mission of equipping engineers, scientists, and healthcare professionals with the essential knowledge and skills to drive productivity, foster innovation, and facilitate discovery in the diagnosis, treatment, and prevention of diseases and conditions.

It is a thirty (30) credits program in which the student will be required to take courses in professional development, STEM, and Project Design. Each student will be able to tailor their coursework accordingly to their aspiring career progression.

We welcome applicants from a broad range of engineering and scientific disciplines. Admission is open to students with diverse academic and professional experiences who demonstrate strong potential for success in our program.

Minimum Requirements:

- A bachelor's degree in engineering or a scientific field.
- Demonstrated foundational knowledge in the following subject areas:
- Anatomy and Physiology
- Biology and Biochemistry
- Calculus I, II, and III
- Linear Algebra and Differential Equations
- Statistics

As part of the admissions review, we assess each applicant's academic background for these core areas. If any gaps are identified, applicants may be offered conditional admission and/or advised to complete a series of recommended prerequisite courses to strengthen their preparation.

Educational Goal

We provide a well-balanced, well-tuned, needs-based curriculum that ensures students are equipped with the necessary skills and knowledge for a successful career. Moreover, we provide courses, human and physical resources, and replicated industry-like environments within an academic setting; these infrastructures and processes provide students with hands-on experiential learning opportunities.

We firmly believe that an "innovation-driven culture" is reshaping the healthcare industry landscape, consequently transforming the educational requirements and the role of biomedical engineers. To address these challenges, we have developed a teaching philosophy for post-undergraduate education that enables a diverse group of students to gain business acumen, professional expertise, in-depth STEM knowledge, and theoretical as well as practical experiences related to the product life cycle of biomedical technologies. We place strong emphasis on hands-on, self-paced, collaborative, and enjoyable learning experiences.

Common Objectives

Students entering our program bring a diverse array of strengths and backgrounds, and they will pursue varied career pathways. With this diversity in mind, we have crafted a curriculum that is rich and flexible while still providing a well-defined and structured educational journey. Regardless of their career goals, our students share several concurrent objectives:

- Gain a comprehensive understanding of the multifaceted dynamics within the healthcare industry.
- Expand and deepen technical and scientific knowledge in areas that align with their interests and professional focus.
- Develop professional acumen to enhance their capabilities in navigating complex workplace scenarios.
- Engage in real-life design challenges that reflect current issues, fostering practical experience and problem-solving skills.

Program Information

- Instruction Mode: In Person
- Location: Ithaca, NY
- Minimum Credits for Degree: 30

Program Requirements

Professional Curriculum

Team Design

Code	Title	Hours
BME 5500	Innovation and Design of Biomedical Technologies	3
BME 5911	BME MEng Design Project Phase I	2
BME 5921	Master of Engineering Design Project - Phase II	4
Total Hours		**9**

Professional Development

Code	Title	Hours
BME 5010	BME MEng Professional Engagement Seminar [1]	2
Self-chosen graduate level professional development courses [2]		7

[1] comprised of 1 credit first semester + 1 credit second semester, totaling 2 credits

[2] These are graduate-level courses that are designed to facilitate professional development, e.g. from the Johnson School of Business or Engineering Management School.

STEM Courses

Code	Title	Hours
Self-chosen graduate-level STEM courses offered by any of Cornell's family of Engineering schools		12

Research Curriculum

Core Courses

Code	Title	Hours
BME 5500	Innovation and Design of Biomedical Technologies	3
BME 5910 & BME 5920	Master of Engineering Research Project - Phase I and Master of Engineering Research Project - Phase II [3]	6
Total Hours		**9**

[3] typically taken in a 3 credit + 3 credit format over two semesters, totaling 6 credits.

Professional Development

Code	Title	Hours
BME 5010	BME MEng Professional Engagement Seminar [1]	2
Self-chosen graduate level professional development courses		7

[1] comprised of 1 credit first semester + 1 credit second semester, totaling 2 credits.

STEM Courses

Code	Title	Hours
Self-chosen graduate-level STEM courses offered by any of Cornell's family of Engineering schools.		12

University Graduation Requirements Requirements for All Students

In order to receive a Cornell degree, a student must satisfy academic and non-academic requirements.

Academic Requirements

A student's college determines degree requirements such as residency, number of credits, distribution of credits, and grade averages. It is the student's responsibility to be aware of the specific major, degree, distribution, college, and graduation requirements for completing their chosen program of study. See the individual requirements listed by each college or school or contact the college registrar's office (https://registrar.cornell.edu/service-resources/college-registrar-directory/) for more information.

Non-academic Requirements

Conduct Matters. Students must satisfy any outstanding sanctions, penalties or remedies imposed or agreed to under the Student Code of Conduct (Code) or Policy 6.4. Where a formal complaint under the Code or Policy 6.4 is pending, the University will withhold awarding a degree otherwise earned until the adjudication process set forth in those procedures is complete, including the satisfaction of any sanctions, penalties or remedies imposed.

Financial Obligations. Outstanding financial obligations will not impact the awarding of a degree otherwise earned or a student's ability to access their official transcript. However, the University may withhold issuing a diploma until any outstanding financial obligations owing to the University are satisfied.

Graduation Requirements for Master of Engineering Degree (M.Eng.) Programs

Requirements

The following are general requirements for graduation that apply to all Master of Engineering degrees offered on the Ithaca campus. The individual program pages provide additional information about discipline-specific requirements.

Credits and Residency Units

- Satisfactory completion of 30 technical credits, of which:
  - At least 21 credits must be earned at Cornell. (Some M.Eng. programs allow up to 9 transfer credits of letter-graded coursework completed outside of Cornell to be applied to the M.Eng. degree.)
  - At least 12 credit hours must be in coursework from the home M.Eng. program (as determined by the program).
  - A maximum of two credit hours graded on an S/U basis may be included.
- The credit hours of any course in which a student receives a grade below C- will not count toward the Master of Engineering degree.
- Students must maintain a course load of at least 12 credit-bearing hours[1] each semester.
- Students may not enroll in more than 20 credit-bearing hours per semester.
- Students must complete two full-time residency units[1] (semesters) as registered M.Eng. students. Winter and summer sessions do not count as residency units.

[1] Course load and residency unit exceptions apply for Distance Learning program students, employee degree program students, and Industrial Partnership Program students. The residency unit requirement is one full-time registered semester for Early Admit M.Eng. students and certain Cornell MPS/MS/PhD student transfers.

Courses

- Only program-approved courses at the 5000 level and above may count toward the M.Eng. degree.
- Courses covering subject matter previously taken at Cornell may not be repeated for credit.
- Satisfactory completion of an engineering design project bearing 3 or more credit hours and including a formal written report.

Other Requirements

- A grade-point average of 2.50 or above is required across all Cornell courses which count for credit towards the M.Eng. degree.
- Students must complete all degree requirements within four calendar years of their first enrollment in the M.Eng. program (six years for distance learning students), inclusive of any leaves of absence.
- Students must complete the M.Eng. Exit Survey prior to graduation.