

ENGINEERING PHYSICS (MENG)

College of Engineering

Program Website (<https://www.engineering.cornell.edu/aep/meng/>)

CIP: 14.1201 | HEGIS: 0919.00 | NYSED: 13335

Program Description

The Master of Engineering (M.Eng.) in Engineering Physics degree is designed to lead directly to employment in engineering design and development. Students have the opportunity to broaden and deepen their preparation in the general field of applied physics, or they may choose the more specific option of preparing for professional engineering work in a particular area such as laser and optical technology, nanostructure science and technology, device physics, materials characterization, or software engineering. Wide latitude is allowed in the choice of the required design project. This is an in-person full-time degree program in Ithaca, NY. The degree program is a one year (two semester) program.

Students plan their program in consultation with the program chair. The objective is to provide a combination of a good general background in physics and introductory study in a specific field of applied physics. Candidates may enter with an undergraduate preparation in physics, engineering physics, or engineering. Those who have majored in physics usually seek advanced work with an emphasis on engineering; those who have majored in an engineering discipline generally seek to strengthen their physics base. Candidates coming from industry usually want instruction in both areas. Students granted the degree will have demonstrated competence in an appropriate core of basic physics. If this has not been accomplished before entering the M.Eng. program, undergraduate classes in electricity and magnetism, classical mechanics, and quantum mechanics may be required in addition to the classes taken to satisfy the M. Eng. requirements.

Program Information

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

Program Requirements

The degree requires 30 credits of graduate-level courses or their equivalent, with at least C– in each course, and distributed as follows:

- a design project in applied science or engineering with a written final report (6 to 12 credits)
- an integrated program of graduate-level courses, as discussed below (16 credits minimum)
- a required special-topics seminar course (2 credits)

The design project, which is proposed by the student and approved by the program chair, is carried out on an individual basis under the guidance of a member of the university faculty.

With the completion of the independent study project the student demonstrates independent thinking and creativity and contributes to an advance in an area of Engineering Physics. The informal study project is completed with a written formal report and an oral presentation of the

results in the AEP 7540 Special Topics in Applied Physics seminar. With guidance from the project advisor, the student must generate a formal project report that covers

1. abstract,
2. background and significance,
3. statement of the specific aim,
4. description of the approach to achieve the aim,
5. results and outcomes, and
6. critical evaluation of the approach, results, and/or outcomes as appropriate.

The individual program of study consists of a compatible sequence of courses focused on a specific area of applied physics or engineering. Its purpose is to provide an appropriate combination of physics and physics-related courses (applied math, statistical mechanics, applied quantum mechanics) and engineering electives (e.g., courses in biophysics, chemical engineering, electrical engineering, materials science, computer science, mechanical engineering, or nuclear engineering). Additional science and engineering electives may be included. Only graduate level (5000 and above) courses are acceptable for credit toward the degree; other undergraduate courses may be required as prerequisites but may not be credited toward the degree.

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 hours¹ each semester.
- Students may not enroll in more than 20 credit-bearing hours per semester.
- Students must complete two full-time residency units¹ (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.