School of Applied and Engineering Physics

UNDERGRADUATE DEGREE PROGRAM

Whether your interest is in basic research or in nanobiotechnology, laser technology and engineering, biophysics, computer technology, information sciences, mechanical engineering, microelectronics and nanoscience, microwave engineering, photonics and optical engineering, software engineering, solid state–device development, or any of the other burgeoning fields of engineering that require outstanding technical backgrounds, an engineering physics bachelor’s degree is your key to success.

The undergraduate Engineering Physics curriculum at Cornell is designed to prepare you for a career in research or development in pure or applied science, advanced technology, or engineering. It focuses on the fundamentals of physics and mathematics, both experimental and theoretical, that are at the heart of modern engineering and science and have broad applicability. By choosing a particular concentration, you can combine this physics base with a firm background in a conventional area of engineering or applied science.

Industry’s demand for graduates with baccalaureate degrees is high, and many students go directly to industrial positions where they work in areas that combine conventional areas of engineering. Some decide to go on for advanced study in applied or basic science or in engineering. The undergraduate program can also serve as an excellent preparation for medical school, business school, or law school.

Cornell’s Engineering Physics program fosters this breadth of opportunity because it focuses on both the fundamentals of science and engineering, and provides direct exposure to the application of these fundamentals. The program emphasizes laboratory experimentation with ample opportunity for innovative design.

The program promotes both the development of strong analytical skills and experimental capability through many of its upper-level core courses. And through elective courses, such as AEP 4380: Computational Engineering Physics, you’ll learn modern computational methods for solving difficult problems in many areas of engineering and applied science.

If you plan to enter the program in Engineering Physics, arrange your common curriculum courses with your developing career goals in mind. Begin the three-semester general physics sequence during your first semester (if your advanced placement credits permit) and satisfy the computing applications requirement with an engineering distribution course like AEP 2640: Interfacing the Digital Domain with an Analog World. This course will also satisfy the college technical writing requirement.

As an Engineering Physics student, you’ll need to take only two engineering distribution courses because AEP 3330: Mechanics of Particles and Solid Bodies which you will take in your junior year, counts as a third member of this category.

### AEP CORE REQUIRED COURSES

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>AEP 4210</td>
<td>Mathematical Physics I</td>
</tr>
<tr>
<td>AEP 4220</td>
<td>Mathematical Physics II</td>
</tr>
<tr>
<td>AEP 3330</td>
<td>Mechanics of Particles and Solid Bodies</td>
</tr>
<tr>
<td>AEP 3550</td>
<td>Intermediate Electromagnetism</td>
</tr>
<tr>
<td>AEP 3560</td>
<td>Intermediate Electrodynamics</td>
</tr>
<tr>
<td>AEP 3610</td>
<td>Introductory Quantum Mechanics</td>
</tr>
<tr>
<td>AEP 3620</td>
<td>Intermediate Quantum Mechanics</td>
</tr>
<tr>
<td>AEP 3630</td>
<td>Electronic Circuits</td>
</tr>
<tr>
<td>AEP 4230</td>
<td>Statistical Thermodynamics</td>
</tr>
<tr>
<td>AEP 4340</td>
<td>Continuum Physics</td>
</tr>
<tr>
<td>PHYS 4410</td>
<td>Advanced Experimental Physics</td>
</tr>
</tbody>
</table>
SOME AREAS OF
FACULTY RESEARCH
atomic, molecular, and
chemical physics
biophysics
condensed matter
physics and materials
science
electron, ion, x-ray,
and scanned-probe
spectroscopy and
microscopy
laser development
nanoscience and
nanobiotechnology
optical physics and
photonics
plasma physics and
astrophysics
quantum electronics
and photonics
renewable energy

If you don’t select a scientific computing course as an engineering distribution course, you may need to use one of your technical electives to satisfy the computing applications requirement. If you’re planning to go on to graduate school, an additional course in mathematics is recommended.

The variety of course offerings provides considerable flexibility in scheduling. In addition, if scheduling conflicts arise, the school may allow substitution of courses nearly equivalent to the courses listed as required.

AEP By the Numbers
Starting salaries of B.S. Engineering Physics graduates (for 2013)
Low $35,000
Median $68,000
High $108,000
Engineering Physics undergraduate students 72
Applied and Engineering Physics graduate students 92

MASTER OF SCIENCE DEGREE PROGRAM
The two-year Master of Science program offers advanced study and training in three disciplines: Optics, Nanotechnology, and Biotechnology. These programs provide valuable training, research, and design project experience. The programs also prepare students for Ph.D. programs in Physics, Applied Physics, or Engineering. Each combines a common core of fundamental mathematics and physics and an interdisciplinary curriculum that addresses the frontiers of their respective technology fields, with a research or design project focused on applying physics to scientific and technological problems.

MASTER OF ENGINEERING DEGREE PROGRAM
Jump start your career with the Master of Engineering Program (M.Eng.). This one-year master’s program offers advanced study and training in Applied Physics. It provides valuable graduate training and research/design project experience sought after by industry, government, and R&D organizations. The curriculum is tailored to fit the needs of individual students, and the project component offers an opportunity for independent research under the supervision of leading scientists and engineers.

Please visit the following website for more details: www.engineering.cornell.edu/meng

www.aep.cornell.edu