Engineering Physics

What is Engineering Physics?
There are about 50 undergraduate engineering physics programs in the United States dating back to 1930. Unlike most other engineering disciplines, EP programs around the country can vary a great deal. So, the answer to the question, “What is engineering physics?” depends on the school. The EP program at the University of Wisconsin-Platteville is a hybrid of applied physics, electrical engineering, and mechanical engineering. EP is an EBET accredited engineering degree, not a physics or science degree.

The engineering physics program is designed to address the needs of students seeking careers in high-tech industries—areas where multiple engineering disciplines merge—or nontraditional engineering disciplines. The EP program is also structured for those students who have an interest in the physical sciences as well as engineering. The EP curriculum provides students with a fundamental knowledge of physics, the application of physics to engineering problem solving, including design, introductory courses in mechanical and electrical engineering, and lastly, a significant professional engineering concentration tailored to suit the individual's particular interest.

The majority of graduates of the EP program have entered industry in such diverse areas as controls, mechanical system design, product development, medical devices, electronics, robotics, manufacturing/quality control, and acoustics. Others have chosen to attend graduate school in either engineering or physics programs.

The Curriculum
The engineering physics curriculum is 130 credits including 56 credits of engineering. The EP program provides a balanced curriculum emphasizing (1) strong communication and team working skills; (2) diverse hands-on experiences to prepare the EP graduate for the demands of laboratory or manufacturing environments; and (3) design with physics and engineering principles. The engineering credits are divided nearly equally amongst electrical and mechanical engineering science, engineering physics, and a professional engineering concentration. The EE and ME science includes introductory courses which provide the necessary prerequisites for further study in these two areas. The EP core covers nearly all the basic areas of physics with a special emphasis placed on practical problem solving, including design. The professional engineering concentration consists of electives. Here, a student may tailor the program to suit individual interests by selecting from a long list of courses in electrical and mechanical engineering as well as some courses in software and industrial engineering. While students are free to choose the electives, we encourage them to select from one of several preconfigured “concentrations,” including controls, electronics/communications, mechanical design, electric power, energy conversion (or thermo-fluid systems), software/digital, biomedical engineering, or microsystems/nanotechnology.

Career Opportunities
The majority of graduates of the EP program have entered industry. While the type of work is fairly broad, nearly all EP graduates carry some form of engineering title (e.g. applications engineer, process engineer, electronics engineer, manufacturing engineer, etc.). Many graduates are involved in electronics design, mechanical design, or even software design while others work in manufacturing concerned with quality control and still others are in research and development. A brief list of companies who have hired graduates of the EP program includes John Deere, Caterpillar, Hamilton Sundstrand, Virent Energy Systems, GE Medical, Cummins, IBM, Oshkosh Truck, Honeywell, Rockwell Collins, Pella, LASX, McCain Foods, Lockheed Martin, MPC, Plexus, Transocean, and NASA. Typical salaries upon graduation have been commensurate with graduates of electrical and mechanical engineering.

Faculty and Facilities
The engineering physics department consists of eight EP (Ph.D.) faculty, two staff, and a laboratory manager. The EP faculty have academic credentials in engineering, engineering physics, microsystems and nanotechnology, and/or physics as well as industrial experiences in two or more of these areas. They have won university awards for excellence in teaching, research, and academic advising. The EP program, like the College of Engineering, Mathematics and Science, does not employ graduate teaching assistants. The facilities are extremely well equipped and regularly updated and include a state-of-the-art optics lab, sensors lab, microsystems/nanotechnology lab, modern physics lab, materials fabrication and nanocharacterization lab, and two computer/student workspace labs. Lastly, we have our very own electronics and wood/metal machine shop to support the multitude of projects throughout the year.
**Co-op Program**
The UW-Platteville advocates an education in which students combine classroom learning with planned and supervised field experiences. Students in the cooperative education program spend one or more semesters with companies in jobs closely related to their major and career objectives. During the cooperative program, students gain valuable experience and income.

**International Opportunities**
The EP major is especially well suited to accommodate students pursuing international opportunities. Any engineering physics major may participate in the International Exchange Program. UW-Platteville has agreements with universities in many countries including Germany, Ireland, the Netherlands, Norway, Sweden, Turkey, Mexico, and Australia. A student may spend a semester or longer taking classes while consuming a lasting cultural experience. Since English is the language of instruction in most of these universities, students can continue their studies without “losing a semester” and can also satisfy the three credit international education requirement. For more information about international exchange opportunities please visit [www.uwplatt.edu/intprog](http://www.uwplatt.edu/intprog).

**Student Activities**
The primary student organization for engineering physics at UW-Platteville is the Society of Physics Students. Our chapter of SPS has been recognized nationally seven times in the last 10 years as being an outstanding chapter. Aside from social activities like pizza parties, canoe outings (SPS owns several canoes), and caving, we often take field trips to such places as Fermi National Laboratory near Chicago. SPS also gives back to the community with its “Physics PhunShop” where EP students travel to local public schools to dazzle our younger citizens with amazing lessons in physics.

**The Women in Engineering Program**
Currently, the relative number of women enrolled in EP is twice that of the college overall. The Women in Engineering Program in the College of Engineering, Mathematics and Science provides support to women enrolled in the college through a variety of programs and services. An information network is developed through the Mentor Program and a local chapter of the Society of Women Engineers, which provides the opportunity to network with other students and professional men and women. For more information about the Women in Engineering Program, please visit [www.uwplatt.edu/wep](http://www.uwplatt.edu/wep), call 608.342.1563, or write to Director, Women in Engineering Program, UW-Platteville, 1 University Plaza, Platteville WI 53818-3099.

**For Additional Information**
For more information, contact Engineering Physics, UW-Platteville, 1 University Plaza, Platteville WI 53818-3099 or call 608.342.1651, fax 608.342.1559, e-mail chemep@uwplatt.edu, or visit our home page at [www.uwplatt.edu/engineering-physics](http://www.uwplatt.edu/engineering-physics). For general information on the university and its programs, see [www.uwplatt.edu](http://www.uwplatt.edu) or contact Admission and Enrollment Services, UW-Platteville, 1 University Plaza, Platteville WI 53818-3099 or call toll free 1.877.897.5288 or locally 608.342.1127.

The University of Wisconsin-Platteville does not discriminate on the basis of age, race, creed, color, handicap, sex, sexual orientation, developmental disability, national origin, ancestry, marital status, arrest record, or conviction record.

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**Suggested Course of Study**

**First Year**

**First Semester**
- Math 2640 Calculus and Analytic Geom. I 4
- Engl 1130 Freshman Composition I 3
- Chem 1450 Chemistry for Engineers 5
- GE 1000 Engineering Success Skills 1
- Hum/FA/HP/SS Elective 3

**Second Semester**
- Math 2740 Calculus and Analytic Geom. II 4
- Engl 1230 Freshman Composition II 3
- Phys 2240 General Physics I 4
- GE 1030 Intro. to Engineering Projects 1
- GE 2030 Engineering Modeling and Design 3
- EE 1210 Circuit Modeling I 3

**Second Year**

**First Semester**
- Math 2840 Calculus and Analytic Geom. III 4
- Phys 2340 General Physics II 4
- GE 2130 Statics 3
- CoSc 1430 Programming in C++ 3
- PE 1000 Fitness Assessment 1

**Second Semester**
- Math 3630 Differential Equations 3
- Phys 3140 Modern Physics I 4
- EE 2210 Circuit Modeling II 4
- Spch 1000 Public Speaking 2
- GE 2630 or 2340 3/4

**Third Year**

**First Semester**
- EE 2220 Signals and Systems 4
- EP 3240 Applied Mechanics 4
- EP 4010 Engineering Physics Lab 2
- Math Elective 3
- Hum/FA/HP/SS Elective 3

**Second Semester**
- EP 4140 Applied Optics 4
- Professional Elective 5/6
- Hum/FA/HP/SS Elective 6

**Fourth Year**

**First Semester**
- EP 3640 Electric and Magnetic Fields 4
- EP 4220 Intro. Quantum Electronics 2
- Professional Elective 6
- Hum/FA/HP/SS Elective 3
- PE 1xxx Phy. Ed. Activity 1

**Second Semester**
- EP 4210 Sensor Lab 2
- EP 4930 Engineering Physics Design 3
- Professional Electives 6
- Hum/FA/HP/SS Elective 6

**Total Credits 130**