*Department of Physics & Engineering Physics*

**Bachelor of Science**

# ENGINEERING PHYSICS

*The Engineering Physics Program is accredited by the Engineering Accreditation Commission (EAC) of the Accreditation Board for Engineering and Technology (ABET). ABET is the only organization that accredits engineering programs in the United States. (see www.abet.org)*

Engineering Physics is an interdisciplinary degree program combining the study of Physics and Engineering into one curriculum. Students acquire a deep knowledge of physical and mathematical principles and also learn how to apply this knowledge to meeting the needs of society. The interdisciplinary nature of this program produces graduates who can work in many diversified fields and who can easily adapt their skills to the needs of their employers.

Three options are available in this program, all of which combine the core of Physics with the core of an Engineering discipline. The Computer Applications Option combines the core of Physics with the core of Computer Engineering, the Electrical Applications Option combines the core of Physics with the core of Electrical Engineering and the Mechanical Applications Option combines the core of Physics with the core of Mechanical Engineering.

Job opportunities are available in private industries and with state and federal government agencies in such areas as pure and applied research, development, design, production and construction, sales and management. Graduates can also enter into advanced degree programs specializing in physics and various branches of engineering.

A high school student interested in majoring in Engineering Physics should complete four years of mathematics that includes trigonometry and an introduction to calculus. Four years of science, which includes both chemistry and physics is highly recommended. A strong background in English is essential.

**ENGINEERING PHYSICS**
**EAC/ABET Accredited**

**59-61 Hour Major - No Minor Required**

| **Required Courses** | | **Hrs** |
|---|---|---|
| EP100 | Physics and Engineering Concepts | 1 |
| EP240 | Circuit Analysis | 4 |
| EP261 | Engineering Mechanics Statics | 3 |
| EP262 or PH370 | Engr Mech-Dynamics or Mechanics | 3 |
| EP340 | Electronic Circuits | 4 |
| EP372 | Signals and Systems | 3 |
| EP480 | Capstone Design | 1 |
| EP481 | Capstone Experience (UI450) | 3 |
| PH230/030 | General Physics I | 5 |
| PH231/031 | General Physics II | 5 |
| PH345 | Experimental Methods I (UI330) | 3 |
| PH360 | Modern Physics | 3 |
| PH371 | Electromagnetics | 3 |

**Choose One Option:**

**Computer Applications (20 hours)**

| | | |
|---|---|---|
| CS155 | Computer Science I | 4 |
| CS265 | Computer Science II | 4 |
| CS315 | C & Unix Environment | 3 |
| EP305 | Digital and Analog System Design | 3 |
| EP310 | Microcomputer Interfacing | 3 |
| EP461 | Computer Applications | 3 |

**Electrical Applications (18 hours)**

| | | |
|---|---|---|
| EP305 | Digital and Analog System Design | 3 |
| EP310 | Microcomputer Interfacing | 3 |
| EP361 | Thermal Analysis | 3 |
| EP374 | Control Systems | 3 |
| EP462 | Materials Science | 3 |
| PH341 | Optics | 3 |

**Mechanical Applications (19 Hours)**

| | | |
|---|---|---|
| EP263 | Mechanics of Materials | 4 |
| EP361 | Thermal Analysis | 3 |
| EP363 | Thermal-Fluid Engineering | 3 |
| EP374 | Control Systems | 3 |
| EP462 | Materials Science | 3 |
| MN350 | Machine Design | 3 |

**Additional Requirements: 31 Hours**

| | | |
|---|---|---|
| CH185/05/085 | General Chemistry I | 5 |
| CS177 | Programming for Scientists & Engrs | 3 |
| MA140 | Analytic Geometry and Calculus I | 5 |
| MA145 | Analytic Geometry and Calculus II | 4 |
| MA240 | Analytic Geometry and Calculus III | 3 |
| MA245 | Vector Calculus | 2 |
| MA345 | Linear Algebra | 3 |
| MA350 | Differential Equations I | 3 |
| MN120 | Fundamentals Engr Design Processes | 3 |

**University Studies Courses: 39 hours**

*Revised 14 July 2008*

**Major: Engineering Physics** **Degree: Bachelor of Science**
**Option: Computer Applications**

| First Semester | | Hrs |
|---|---|---|
| EP100 | Physics and Engr. Concepts | 1 |
| MA140 | Analytic Geom. & Calc. I* | 5 |
| CS177 | Programming for Sci. & Engrs. | 3 |
| CH185 | General Chemistry I** | 5 |
| CH085 | General Chemistry I Laboratory | + |
| CH005 | General Chemistry I Recitation | + |
| EN100 | English Composition | 3 |
| | | 17 |

| Second Semester | | Hrs |
|---|---|---|
| MA145 | Analytic Geom. & Calc II | 4 |
| PH230 | General Physics I Lecture | 5 |
| PH030 | General Physics I Laboratory | + |
| MN120 | Fund. Engineering Design Proc. | 3 |
| UI100 | First Year Seminar | 3 |
| | | 15 |

| Third Semester | | Hrs |
|---|---|---|
| MA240 | Analytic Geom. & Calc III | 3 |
| PH231 | General Physics II Lec | 5 |
| PH031 | General Physics II Lab | + |
| EP261 | Engineering Mechanics: Statics | 3 |
| MA345 | Linear Algebra | 3 |
| EN140 | Rhetoric and Critical Thinking | 3 |
| | | 17 |

| Fourth Semester | | Hrs |
|---|---|---|
| MA245 | Vector Calculus | 2 |
| MA350 | Differential Equations I | 3 |
| EP240 | Circuit Analysis | 4 |
| EP305 | Digital & Analog System Design | 3 |
| EP262 | Engineering Mech: Dynamics [#] | |
| | OR Univ. Studies core course | 3 |
| | | 15 |

| Fifth Semester | | Hrs |
|---|---|---|
| EP461 | Computer Applications [+] | 3 |
| PH371 | Electromagnetics[+] | 3 |
| EP372 | Signals and Systems[+] | 3 |
| UI330 | Experimental Methods I | 3 |
| CS155 | Computer Science I | 4 |
| EP310 | Microcomputer Interfacing | 3 |
| | | 19 |

| Sixth Semester | | Hrs |
|---|---|---|
| EP340 | Electronic Circuits | 4 |
| CS265 | Computer Science II | 4 |
| SC105 | Fundamentals of Oral Com. | 3 |
| | University Studies core course | 3 |
| | University Studies core course | 3 |
| | | 17 |

| Seventh Semester | | Hrs |
|---|---|---|
| CS315 | C in the Unix Environment | 3 |
| EP480 | Capstone Design | 1 |
| PH360 | Modern Physics | 3 |
| UI3XX | US Interdisciplinary Course | 3 |
| PH370 | Mechanics [#] | |
| | OR Univ. Studies core course | 3 |
| | University Studies core course | 3 |
| | | 16 |

| Eighth Semester | | Hrs |
|---|---|---|
| UI450 | Capstone Experience | 3 |
| | University Studies core course | 3 |
| | University Studies core course | 3 |
| | University Studies core course | 3 |
| | University Studies core course | 3 |
| | | 15 |

*Satisfies the Logical Systems category in the Perspective on Natural Systems of the University Studies Program.
**Satisfies the Physical Systems category in the Perspective on Natural Systems of the University Studies Program.
[#] PH370 offered in even fall semesters may be substituted for EP262.
[+] These courses are offered every two years. A student starting the sequence in an even-numbered year must switch between the fifth and seventh semesters.

*Revised 14 July 2008*