Physics is perhaps the most fundamental of the sciences. It involves the study of the nature of basic things such as motion, forces, energy, matter, heat, sound, light, and the atom. Engineering is the profession in which basic knowledge from the mathematical and natural sciences is applied to develop new ways to utilize the materials and forces of nature for the benefit of society.

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 learn to apply this knowledge to meet 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 employers.

The engineering physics program is an engineering program that is accredited by the Engineering Accreditation Commission of ABET, http://www.abet.org, which is the agency that accredits all engineering programs in the United States. Our seniors take the Fundamentals of Engineering (FE) Exam, which is the first step to becoming a Registered Professional Engineer (PE). About 85% of our seniors pass this exam, which is well above the national average.

**Engineering physics students will...**

- Obtain a deep understanding of the fundamental principles of science and mathematics underlying engineering and be able to apply them to meet the needs of society.
- Have the ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
- Have the ability to use the techniques, skills, and modern tools necessary for physics and engineering careers.
- Have the broad education necessary to understand the impact of physics and engineering solutions in a global, economic, environmental, and societal context.
- Be well prepared to pass the FE Exam.

**Career Planning**

All graduates find employment in their field or start the graduate programs of their choice within a few months of graduation.

<table>
<thead>
<tr>
<th>Demonstrated Career Proficiency is a Requirement of all Southeast Students</th>
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<tbody>
<tr>
<td>CL001/CL002 First Semester</td>
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<tr>
<td>CL003 Junior Year</td>
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<td>CL004 Senior Year</td>
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**Internship and Employment Opportunities of Recent Graduates**

- Century Link Technology Solutions
- National Information Solutions Cooperative
- TG Missouri
- Schaefer’s Electrical Enclosures
- Southeast Missouri State University
- Southeast Hospital
- BIS Industrial Services
- Honeywell F M & T
- Lighting Science Group Corporation
- Wright Patterson Air Force Base
- Boeing
- Lockheed Martin
- NASA
- National Geospatial Intelligence Agency
- Raytheon
- Rockwell Collins
- GeoEye, Inc.

**Graduate Schools and Programs of Recent Graduates**

- University of Arkansas – MicroEP Program
- Washington University – Physics
- University of Missouri – Aerospace Engineering
- University of Missouri – Physics
- Boise State University – Biomedical Engineering
- University of Kansas – Biomedical Engineering
- Southern Illinois University – Edwardsville
- University of North Texas – Physics

**Admission Requirements**

A high school student interested in majoring in engineering physics should complete four years of mathematics that include trigonometry and an introduction to calculus. Four years of science, which include both chemistry and physics, is highly recommended. A strong background in English is essential.
Engineers Physics: Electrical Applications Option
Bachelor of Science (BS)

This is a guide based on the 2014-2015 Undergraduate Bulletin and is subject to change. The time it takes to earn a degree will vary based on several factors such as dual enrollment, remediation, and summer enrollment. Students will meet with an academic advisor each semester and use DegreeWorks to monitor their individual progress.

**CURRICULUM CHECKLIST**

**Engineering Physics: Electrical Applications Option – 60 Hours**

A grade of "C" or better is required in each course that is a prerequisite course.

- **EP100** Physics and Engineering Concepts (1)
- **EP240** Circuit Analysis (4)
- **EP261** Engineering Mechanics - Statics (3)
- **EP262** Engineering Mechanics - Dynamics (3)
- **EP305** Digital System Design (3)
- **EP310** Microcontroller and Embedded Systems (3)
- **EP340** Electronic Circuits (4)
- **EP361** Thermal Analysis (3)
- **EP372** Signals and Systems (3)
- **EP374** Control Systems (3)
- **EP380** Engineering Design and Research (1)
- **EP462** Materials Science (3)
- **EP480** Capstone Design (1)
- **PH230/030** General Physics I (5)
- **PH231/031** General Physics II (5)
- **PH360** Modern Physics (3)
- **PH341** Optics (3)
- **PH371** Electromagnetics (3)
- **UI330** Experimental Methods (3)
- **UI450** Capstone Experience (3)

**Support Courses:**

A grade of "C" or better is required in each course that is a prerequisite course.

- **CH185/085/005** General Chemistry (5)
- **CS177** Programming for Scientists and Engineers (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 (3)
- **MN120** Fundamentals of the Engineering Design Process (3)

**University Studies Requirements (not already listed above):**

**UI100** First Year Seminar, **EN100** English Composition, **Artistic Expression**, **Written Expression**, **Oral Expression**, **Literary Expression**, **Economic Systems**, **Social Systems**, and one IU/UI3XX

**NOTE:** Seniors are required to take the Fundamentals of Engineering Exam in their last semester.

**SAMPLE FOUR-YEAR PLAN**

**Engineering Physics: Electrical Applications Option**

Requirements for the 2014-2015 Undergraduate Bulletin

<table>
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<th>Fall Semester</th>
<th>Hrs</th>
<th>Spring Semester</th>
<th>Hrs</th>
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*(Summer courses are encouraged to avoid 18-hour semesters.)*

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<th>Spring Semester</th>
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*meets Oral Expression, highly recommended for major

Degree requirements for all students: a minimum of 120 credit hours, completion of University Studies program, career proficiencies (CL001-004), Writing Proficiency Exam (WP003), and completion of the Measure of Academic Proficiency and Progress (MAPP) at the freshman and senior levels.

Refer to the Undergraduate Bulletin or DegreeWorks for additional graduation requirements (i.e., minimum GPA and course work) for your program of study.