PROGRAM IN ENGINEERING PHYSICS

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General Information

History

The Engineering Physics Program at the University of Oklahoma is one of the oldest of its kind in the nation. Established in 1924, the Engineering Physics program has been accredited by the Accreditation Board for Engineering and Technology since 1953. The program makes use of the extensive teaching and research facilities of both the Gallogly College of Engineering and the Homer L. Dodge Department of Physics and Astronomy in the College of Arts and Sciences.

What is Engineering Physics?

The engineering physicist is interested not only in understanding physical phenomena and the underlying principles, but also in applying this knowledge to the solution of a broad range of challenges. As the miniaturization of transistors, lasers and memory elements continues, understanding of their operation increasingly requires knowledge of quantum mechanics, statistical mechanics and other aspects of nanoscience.

Mission

The mission of the Engineering Physics Program is to prepare students for careers in areas of technology where the disciplines of physics and engineering intersect. The Program provides an interdisciplinary environment where pure and applied science merge. The curriculum is designed to develop sufficient depth in both engineering skills and physics knowledge to produce engineers who are able to relate fundamental physical principles to practical problems in engineering.

Programs & Facilities

Scholarships

There are many scholarships available to current Engineering Physics students.

Student Organizations

There are many great student organizations at OU for Engineering Physics students.

Undergraduate

Engineering Physics Program Educational Objectives (PEO)

Program Educational Objective 1:

Our graduates will pursue careers as engineers, as physicists, or in other fields where an education in Engineering Physics is advantageous.

Program Educational Objective 2:

Our graduates will be effective problem solvers in their chosen career paths.

Program Educational Objective 3:

Our graduates will engage in life-long learning and professional development activities.

Engineering Physics Undergraduate Student Outcomes

To prepare graduates of the Engineering Physics program to attain these educational objectives, the Engineering Physics curriculum is designed to include the following student outcomes:

1. an ability to apply knowledge of mathematics, science, and engineering;
2. an ability to design and conduct experiments, as well as to analyze and interpret data;
3. an 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;
4. an ability to function on multidisciplinary teams;
5. an ability to identify, formulate, and solve engineering problems;
6. an understanding of professional and ethical responsibility;
7. an ability to communicate effectively;
8. the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context;
9. a recognition of the need for, and an ability to engage in life-long learning;
10. a knowledge of contemporary issues;
11. an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Engineering Physics, Bachelor of Science

The Engineering Physics Bachelor of Science curriculum is designed to develop sufficient depth in both engineering skills and physics knowledge to produce engineers capable of working at the cutting edge of developing technologies and contribute to new fields as they emerge. Bachelor of Science in Engineering Physics accredited by the Engineering Accreditation Commission of ABET, https://www.abet.org, under the General Criteria and the Engineering, General Engineering, Engineering Physics, Engineering Science and Similarly Named Program Criteria.

Graduate

The Engineering Physics, Master of Science degree program provides coursework and practical experience that prepares students for immediate placement in industrial positions.

Each student in the Engineering Physics, Ph.D. is assigned an advisory committee who will determine the specific requirements within the guidelines set by the Graduate College and Gallogly College of Engineering.

Courses

EPHY 3440 Mentored Research Experience 3 Credit Hours
0 to 3 hours. Prerequisites: ENGL 1113 or equivalent, and permission of instructor. May be repeated; maximum credit 12 hours. For the inquisitive student to apply the scholarly processes of the discipline to a research or creative project under the mentorship of a faculty member. Student and instructor should complete an Undergraduate Research & Creative Projects (URCP) Mentoring Agreement and file it with the URCP office. Not for honors credit. (F, Sp, Su)

EPHY 3960 Honors Reading 1-3 Credit Hours
1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Consists of topics designated by the instructor in keeping with the student's major program. Cover materials not usually presented in the regular courses. (F, Sp, Su)

EPHY 3970 Honors Seminar 1-3 Credit Hours
1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Projects covered will vary. Deal with concepts not usually presented in regular coursework. (F, Sp, Su)

EPHY 3980 Honors Research 1-3 Credit Hours
1 to 3 hours. Prerequisite: admission to Honors Program. May be repeated; maximum credit six hours. Provides an opportunity for the gifted Honors candidate to work on a special project in the student's field. (F, Sp, Su)

EPHY 3990 Independent Study 1-3 Credit Hours
1 to 3 hours. Prerequisite: permission of instructor and junior standing. May be repeated once with change of content. Independent study may be arranged to study a subject not available through regular course offerings. (F, Sp, Su)

EPHY 4281 Engineering Co-Op Program 1 Credit Hour
(Crosslisted with AME, CH E, CEES, C S, ECE, ISE and BME 4281) Prerequisite: Departmental permission and junior standing. May be repeated; maximum credit 6 hours. The Co-Op program provides students an opportunity to enhance their education via career exploration in related professional work experiences. Course assignments help students articulate their experiences by completing journals; mid-term paper; final paper and/or final presentation. Faculty receive an evaluation from the student's Co-Op supervisor who monitors performance. Faculty collaborate with the Co-Op supervisor to ensure student success. (F, Sp, Su)

EPHY 4960 Directed Readings 1-4 Credit Hours
1 to 4 hours. Prerequisite: good standing in University; permission of instructor and dean. May be repeated; maximum credit four hours. Designed for upper-division students who need opportunity to study a specific problem in greater depth than formal course content permits. (Irreg.)

EPHY 4970 Special Topics/Seminar 1-3 Credit Hours
1 to 3 hours. Prerequisite: Senior standing or permission of instructor. May be repeated; maximum credit nine hours. Special topics or seminar course for content not currently offered in regularly scheduled courses. May include library and/or laboratory research and field projects. (Irreg.)

EPHY 4990 Special Studies 1-3 Credit Hours
1 to 3 hours. Prerequisite: Physics 2424 or 2524, integral calculus, permission. May be repeated with change of subject matter; maximum credit six hours. (F, Sp, Su)

EPHY 5960 Directed Readings 1-3 Credit Hours
1 to 3 hours. Prerequisite: graduate standing and permission of department. May be repeated; maximum credit twelve hours. Directed readings and/or literature reviews under the direction of a faculty member. (F, Sp, Su)

EPHY 5970 Special Topics/Seminar 1-3 Credit Hours
1 to 3 hours. Prerequisite: Graduate standing or permission of instructor. May be repeated; maximum credit nine hours. Special topics or seminar course for content not currently offered in regularly scheduled courses. May include library and/or laboratory research and field projects. (Irreg.)

EPHY 5980 Research for Master's Thesis 2-9 Credit Hours
Variable enrollment, two to nine hours; maximum credit applicable toward degree, four hours. (F, Sp, Su)

EPHY 5990 Special Problems 1-10 Credit Hours
Prerequisite: permission. May be repeated with change of subject matter; maximum credit four hours for the master's degree, or 10 hours for the doctoral degree. (F, Sp, Su)

EPHY 6960 Directed Readings 1-3 Credit Hours
1 to 3 hours. Prerequisite: graduate standing or permission of instructor. May be repeated; maximum credit six hours. Directed readings and/or literature review under the direction of a faculty member. (Irreg.)

EPHY 6970 Seminar 1-3 Credit Hours
1 to 3 hours. Prerequisite: permission. May be repeated with change of subject matter; maximum credit four hours for the master's degree, or 10 hours for the doctoral degree. Seminar in Engineering Physics. (F, Sp)

EPHY 6980 Research for Doctoral Dissertation 2-16 Credit Hours
2 to 16 hours. Prerequisite: Graduate standing and permission of instructor; may be repeated. Directed research culminating in the completion of the doctoral dissertation. (F, Sp, Su)

EPHY 6990 Independent Study 1-3 Credit Hours
1 to 3 hours. Prerequisite: Graduate standing and permission of instructor. May be repeated; maximum credit nine hours. Contracted independent study for a topic not currently offered in regularly scheduled courses. Independent study may include library and/or laboratory research and field projects. (Irreg.)

Faculty

Last Name	First/Middle Name	Middle init.	OU Service start	Title(s), date(s) appointed	Degrees Earned, Schools, Dates Completed
Abbott	Braden	K	2000	PROFESSOR OF PHYSICS AND ASTRONOMY, 2013; PROFESSOR ENGINEERING PHYSICS	PhD, Purdue, 1994; MS, Purdue, 1992; BA, Univ of Minneosta Morris, 1989
Abraham	Eric	R	1998	ASSOCIATE PROFESSOR OF PHYSICS AND ASTRONOMY, 2004; L.J. SEMROD PRESIDENTIAL PROFESSOR, 2005; ASSOCIATE PROFESSOR ENGINEERING PHYSICS	PhD, Rice Univ, 1996; BA, St. Olaf College, 1991

Bumm	Lloyd	A	2001	ASSOCIATE PROFESSOR OF PHYSICS AND ASTRONOMY, 2007; ASSOCIATE PROFESSOR ENGINEERING PHYSICS	PhD, Northwestern Univ, 1991; BS, Clarkson Univ, 1982	Stupak	John	2016	ASSISTANT PROFESSOR OF PHYSICS AND ASTRONOMY, 2016; ASSISTANT PROFESSOR ENGINEERING PHYSICS	PhD, SUNY at Stonybrook, 2012; BS, Fairfield Univ, 2007
Gutierrez	Phillip		1989	PROFESSOR OF PHYSICS AND ASTRONOMY, 2001; PROFESSOR ENGINEERING PHYSICS	PhD, Univ of California Riverside, 1983; MS, Univ of California Riverside, 1980; BS, Univ of California Riverside, 1976					
Marino Valle	Alberto		2012	ASSISTANT PROFESSOR OF PHYSICS AND ASTRONOMY, 2012; ASSISTANT PROFESSOR ENGINEERING PHYSICS	PhD, Univ of Rochester, 2006; MS, Univ of Rochester, 2002; BS, Universidad de Monterrey, 1998					
Santos	Michael	B	1993	SAMUEL ROBERTS NOBLE PRESIDENTIAL PROFESSOR, 1997; TED AND CUBA WEBB PRESIDENTIAL PROFESSOR, 2003; PROFESSOR OF PHYSICS AND ASTRONOMY, 2004; CHARLES L. BLACKBURN CHAIR IN ENGINEERING PHYSICS, 2006	PhD, Princeton Univ, 1992; MA, Princeton Univ, 1989; BS, Cornell Univ, 1986					
Schwettmann	Arne		2014	ASSISTANT PROFESSOR OF PHYSICS AND ASTRONOMY, 2014; ASSISTANT PROFESSOR ENGINEERING PHYSICS	PhD, Univ of Oklahoma, 2012; MS, Univ of North Texas, 2003; BS, Universität Hannover, 2001					
Sellers	Ian	R	2011	ASSOCIATE PROFESSOR OF PHYSICS AND ASTRONOMY, 2017; ASSISTANT PROFESSOR ENGINEERING PHYSICS	PhD, Univ of Sheffield, 2004; B Eng, Univ of Liberpool, 1999					
Skubic	Patrick	L	1980	PROFESSOR OF PHYSICS AND ASTRONOMY, 1993; PROFESSOR ENGINEERING PHYSICS	PhD, Univ of Michigan, 1977; MS, Univ of Michigan, 1970; BS, South Dakota State Univ, 1969					
Strauss	Michael	G	1995	CARLISLE AND LURLINE MABREY PRESIDENTIAL PROFESSOR, 2006; DAVID ROSS BOYD PROFESSOR OF PHYSICS AND ASTRONOMY, 2012; PROFESSOR ENGINEERING PHYSICS	PhD, Univ of California Los Angeles, 1988; MS, Univ of California Los Angeles, 1983; BS, Biola Univ, 1981					