

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

Major: Engineering Physics
Option: Electrical Applications

Degree: Bachelor of Science

<u>First Semester</u>			<u>Hrs</u>	<u>Second Semester</u>			<u>Hrs</u>
EP100	Physics and Engr. Concepts		1	MA145	Analytic Geom. & Calc II		4
MA140	Analytic Geom. & Calc. I*		5	PH230	General Physics I Lecture		5
CS177	Programming for Sci. & Engrs.		3	PH030	General Physics I Laboratory		+
CH185	General Chemistry I**		5	MN120	Fund. Engineering Design Proc.		3
CH085	General Chemistry I Laboratory		+	UI100	First Year Seminar		<u>3</u>
CH005	General Chemistry I Recitation		+				15
EN100	English Composition		<u>3</u>				
			17				

<u>Third Semester</u>			<u>Hrs</u>	<u>Fourth Semester</u>			<u>Hrs</u>
MA240	Analytic Geom. & Calc III		3	MA245	Vector Calculus		2
PH231	General Physics II Lecture		5	MA350	Differential Equations I		3
PH031	General Physics II Laboratory		+	EP240	Circuit Analysis		4
EP261	Engineering Mechanics: Statics		3	EP305	Digital & Analog System Design		3
MA345	Linear Algebra		3	EP262	Engineering Mech: Dynamics [#]		
EN140	Rhetoric and Critical Thinking		<u>3</u>		OR Univ. Studies core course		<u>3</u>
			17				15

<u>Fifth Semester</u>			<u>Hrs</u>	<u>Sixth Semester</u>			<u>Hrs</u>
PH360	Modern Physics		3	EP340	Electronic Circuits		4
PH371	Electromagnetics ⁺		3	PH341	Optics ⁺⁺		3
EP310	Microcomputer Interfacing		3	EP374	Control Systems ⁺⁺		3
EP372	Signals and Systems ⁺		3		University Studies core course		3
UI330	Experimental Methods I		3		University Studies core course		<u>3</u>
SC105	Fundamentals of Oral Com.		<u>3</u>				16
			18				

<u>Seventh Semester</u>			<u>Hrs</u>	<u>Eighth Semester</u>			<u>Hrs</u>
EP361	Thermal Analysis ⁺		3	EP462	Materials Science ⁺⁺		3
EP480	Capstone Design		1	UI450	Capstone Experience		3
UI3XX	US Interdisciplinary course		3		University Studies core course		3
PH370	Mechanics [#]				University Studies core course		3
	OR Univ. Studies core course		3		University Studies core course		<u>3</u>
	University Studies core course		3				15
	University Studies core course		<u>3</u>				
			16				

*Satisfies the Logical system 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.

⁺⁺ These courses are offered every two years. A student starting the sequence in an even-numbered year must switch between the sixth and eighth semesters.