APPLIED PHYSICS, B.S.

Objectives

The Bachelor of Science in Applied Physics is an interdisciplinary program that integrates the core physics curriculum with those of other majors. Students will choose the appropriate sequence of courses that matches their career aspirations in consultation with their advisor. By combining different perspectives, tools, and ideas, Applied Physics majors will be prepared to address some of today's and tomorrow's most challenging problems. In addition to regular coursework, all Applied Physics majors must complete a senior thesis project as a graduation requirement. This hands-on research experience with faculty from Physics and other disciplines exposes students to the type of work encountered in graduate school and industry, and enhances their undergraduate portfolio. Upon graduation, students are prepared to be successful in traditional physics career as well as in new and emerging fields.

Learning Outcomes

Applied Physics majors will be able to:

- Comprehend the concepts and theories of classical and modern physics, as well as the discoveries and inquiries of contemporary physics.
- Solve problems using the relevant mathematical methods.
- Design and conduct experiments, as well as analyze and interpret the resulting data.
- Form new inferences about the physical world by carrying out scientific investigations.
- Communicate effectively core physical principles, experimental results, and analysis of physical problems.
- Demonstrate ethical and unbiased behaviors while engaging in scientific endeavors.

Major Requirements

Code	Title	Semester Hours
Lower Division Requirements [1]		
CHEM 111	General Chemistry I Lab	1
CHEM 114	General Chemistry for Engineers	3
EECE 2110	Circuits I	3
EECE 2100	Circuits I Lab	1
EECE 2210	Circuits II	4
EECE 2240	Introduction to Digital Systems	4
ENGR 1300	Engineering Visualization	2
MATH 131	Calculus I	4
MATH 132	Calculus II	4
MATH 234	Calculus III	4
MATH 246	Differential Equations and Linear Algebra	4
PHYS 1100	Introduction to Mechanics	4
PHYS 1200	Computational Lab	2
PHYS 1600	Waves, Optics, and Thermodynamics	4
PHYS 2100	Introduction to Electricity and Magnetism	4
PHYS 2600	Foundations of Modern Physics	4
Subtotal		
Upper Division Requirements [2]		
EECE 3100	Junior Lab I	4
EECE 3130	Electronics	4
EECE 3140	Microprocessor and Microcontroller Systems	4
or EECE 3210	Signals and Linear Systems	
MATH 356	Methods of Applied Mathematics	4
PHYS 3100	Electrodynamics	4
PHYS 3200	Quantum Mechanics	4
PHYS 3300	Thermodynamics and Statistical Mechanics	4
PHYS 3400	Advanced Laboratory	4
PHYS 3800	Junior Project	1
PHYS 4800	Capstone Experience	2
PHYS 4810	Senior Thesis	1
Select two of the following:		8
PHYS 4100	Space Physics	
PHYS 4150	Condensed Matter Physics	
PHYS 4200	Astrophysics	
PHYS 4250	Modern Optics	
PHYS 4300	Biophysics	
PHYS 4350	Elementary Particle Physics	
PHYS 4400	Introduction to Relativity and Cosmology	
Subtotal		96
Total Semester Hours		**96**

1

Each course in MATH and PHYS must be passed with a grade of C (2.0) or better.

2

To graduate, a student must have at least a 2.0 (C) average in all upper division physics courses.

Applied Physics Curriculum

(127-128 S.H.)

Course	Title	Semester Hours
First Year		
Fall		
CHEM 111	General Chemistry I Lab	1
CHEM 114	General Chemistry for Engineers	3
FFYS 1000	First Year Seminar	4
MATH 131	Calculus I	4
PHYS 1600	Waves, Optics, and Thermodynamics	4
	Semester Hours	**16**
Spring		
ENGR 1300	Engineering Visualization	2
MATH 132	Calculus II	4
PHYS 1100	Introduction to Mechanics	4
PHYS 1200	Computational Lab	2
RHET 1000	Rhetorical Arts	3-4
	Semester Hours	**15-16**
Sophomore Year		
Fall		
PHYS 2100	Introduction to Electricity and Magnetism	4
MATH 234	Calculus III	4
MATH 246	Differential Equations and Linear Algebra	4
EECE 2110	Circuits I	3

EECE 2100	Circuits I Lab	1
	Semester Hours	**16**
Spring		
PHYS 2600	Foundations of Modern Physics	4
EECE 2210	Circuits II	4
EECE 2240	Introduction to Digital Systems	4
University Core		4
	Semester Hours	**16**
Junior Year		
Fall		
PHYS 3100	Electrodynamics	4
EECE 3100	Junior Lab I	4
EECE 3130	Electronics	4
MATH 356	Methods of Applied Mathematics	4
	Semester Hours	**16**
Spring		
PHYS 3300	Thermodynamics and Statistical Mechanics	4
PHYS 3800	Junior Project	1
Select one of the following:		4
EECE 3210	Signals and Linear Systems	
University Core		
University Core		4
University Core		4
	Semester Hours	**17**
Senior Year		
Fall		
PHYS 3200	Quantum Mechanics	4
PHYS 4800	Capstone Experience	2
Select one of the following:		4
EECE 3140	Microprocessor and Microcontroller Systems	
University Core		
Upper Division Physics Elective		4
	Semester Hours	**14**
Spring		
PHYS 4810	Senior Thesis	1
PHYS 3400	Advanced Laboratory	4
Upper Division Physics Elective		4
University Core		4
University Core		4
	Semester Hours	**17**
	Minimum Semester Hours	**127-128**

Note:
Senior Year Fall Semester Dean's List requires a minimum of 14 semester hours

Applied Physics majors are required to take a minimum of 32 semester hours to fulfill the University Core. If a student chooses to take one or more core courses that are not 4 semester hours, they may need to take additional core courses to meet the 32 unit requirement.