PHYSICS, B.S.

Objectives

The Bachelor of Science in Physics provides a solid foundation in classical, quantum, and relativistic physics. By choosing appropriate physics electives in consultation with her/his faculty advisor, the student can study astrophysics, condensed matter systems, cosmology, particle physics, and space physics. In addition to regular coursework, all Physics majors must complete a senior thesis project as a graduation requirement. This hands-on research experience with Physics faculty exposes students to the type of work encountered in graduate school and industry, and enhances their undergraduate portfolio. Upon graduation, Physics students can pursue advanced studies in a variety of physics-related disciplines, as well as in fields such as teaching, medicine, business management, and law, where physics majors can utilize their problem-solving and critical-thinking skills.

Learning Outcomes

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
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 2200	Intermediate Mechanics	4
PHYS 2600	Foundations of Modern Physics	4
Subtotal		44
Upper Division Requirements		
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		32
Total Semester Hours		**76**

[1]

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

Note:
To graduate, a student must have at least a 2.0 average in all upper division physics courses.

Physics Curriculum

(122-123 S.H.)

Course	Title	Semester Hours
First Year		
Fall		
CHEM 111	General Chemistry I Lab	1
CHEM 114	General Chemistry for Engineers	3
MATH 131	Calculus I	4
FFYS 1000	First Year Seminar	4
PHYS 1600	Waves, Optics, and Thermodynamics	4
	Semester Hours	**16**
Spring		
PHYS 1100	Introduction to Mechanics	4
PHYS 1200	Computational Lab	2
ENGR 1300	Engineering Visualization	2
MATH 132	Calculus II	4
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
University Core		4
	Semester Hours	**16**
Spring		
PHYS 2200	Intermediate Mechanics	4
PHYS 2600	Foundations of Modern Physics	4
University Core		4
University Core		4
	Semester Hours	**16**

Junior Year		
Fall		
PHYS 3100	Electrodynamics	4
PHYS 3200	Quantum Mechanics	4
MATH 356	Methods of Applied Mathematics	4
University Core		4
	Semester Hours	**16**
Spring		
PHYS 3300	Thermodynamics and Statistical Mechanics	4
PHYS 3400	Advanced Laboratory	4
PHYS 3800	Junior Project	1
University Core		4
Any Upper Division Elective		3
	Semester Hours	**16**
Senior Year		
Fall		
PHYS 4800	Capstone Experience	2
Upper Division Physics Elective I		4
University Core		4
Any Upper Division Elective		3
	Semester Hours	**13**
Spring		
PHYS 4810	Senior Thesis	1
Upper Division Physics Elective		4
Any Lower or Upper Division Elective		3
Any Lower or Upper Division Elective		3
Any Upper Division Elective		3
	Semester Hours	**14**
	Minimum Semester Hours	**122-123**

Note:
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.

Senior Year Spring Semester Dean's List requires a minimum of 14 semester hours.