APPLIED PHYSICS, B.S.

Completion of this major prepares one for a career as a laboratory technician, systems analyst, engineering assistant, research associate, or physics associate. Continued study may include a master's degree in physics, engineering, geology, biology, environmental science, natural science, and science education, among others. It may also include doctorates in medicine, dentistry, or the previously identified fields.

The requirements for admission to this degree track are a minimum CGPA of 2.5 and MATH 175. Students interested in this track are encouraged to make their selection of major as soon as possible.

Code	Title	Credits
Prerequisite Courses		
PHYS 100	Preparation for Physics	3
CHEM 100	Preparation for General Chemistry	3
Required Courses		
PHYS 140	Principles of Physics I - Lecture	3
PHYS 1140	Principles of Physics I - Laboratory and recitation	1
PHYS 141	Principles of Physics II - Lecture	3
PHYS 1141	Principles of Physics II - Laboratory and Recitation	1
PHYS 230	Physics III (Lecture)	3
PHYS 1230	Physics III Recitation & Laboratory	1
MATH 192	Calculus and Analytic Geometry I	4
MATH 193	Calculus and Analytic Geometry II	4
MATH 292	Calculus & Analytical Geometry III	4
MATH 311	Differential Equations for Engineers	4
CHEM 105	General Chemistry I Lecture	3
CHEM 1105	General Chemistry I Recitation/Laboratory	2
CHEM 106	General Chemistry II Lecture	3
CHEM 1106	General Chemistry II Recitation/Laboratory	2
INTD 180	Computer Tools for Science and Mathematic Majors [1]	3
PHYS 321	Theory and Applications of Electricity and Magnetism	3
PHYS 401	Principles and Application of Modern Optics	3
PHYS 1401	Optics Recitation/Laboratory	1
PHYS 405	Introduction to Quantum Mechanics	3
PHYS 410	Classical Mechanics	4
Restricted Electives		
Select a minimum of nine credits from the following courses:		9
PHYS 204	Digital Electronics and Applications	3
PHYS 301	Thermodynamics and Kinetic Theory	3
PHYS 307	Principles of Electronics Lecture	3
PHYS 404	Nuclear Radiation: Theory and Applications	3
Select a minimum of nine credits from the following courses, or from other courses approved by the Chairperson:		9
Supportive Electives		
CHEM 305	Physical Chemistry I	3
CHEM 3305	Physical Chemistry I Recitation/Laboratory	2
CHEM 306	Physical Chemistry II, Lecture	3
CHEM 3306	Physical Chemistry II Recitation/Laboratory	2
EESC 110	Physical Geography	3
PHYS 113	Introduction to Astronomy	3
MATH 330	Mathematical Statistics I	3
Total Credits		**110**

Freshman

Semester 1		**Credits**
ENGL 101 or ESL 101	English Composition I or English Composition I for English as a Second Language Students	4
MATH 192	Calculus and Analytic Geometry I [1]	4
PHYS 140	Principles of Physics I - Lecture	3
PHYS 1140	Principles of Physics I - Laboratory and recitation	1
General Education Tier I Course		3
INTD 101	Orientation to College *First time Freshmen Only	1
	Credits	**16**
Semester 2		
ENGL 102 or ESL 102	English Composition II or	4
MATH 193	Calculus and Analytic Geometry II [1]	4
PHYS 141	Principles of Physics II - Lecture	3
PHYS 1141	Principles of Physics II - Laboratory and Recitation	1
General Education Tier I Course		3
	Credits	**15**
Sophomore		
Semester 1		
PHYS 230	Physics III (Lecture)	3
PHYS 1230	Physics III Recitation & Laboratory	1
MATH 292	Calculus & Analytical Geometry III	4
CHEM 105	General Chemistry I Lecture	3
CHEM 1105	General Chemistry I Recitation/Laboratory	2
INTD 180	Computers Tools for Science and Math (General Education Tier I Course)	3
	Credits	**16**
Semester 2		
PHYS 113 or EESC 110	Introduction to Astronomy (Physics Supportive Elective Course/General Education Tier I Course) or Physical Geography	3
PHYS 204 or PHYS 301	Digital Electronics and Applications (Physics Restricted Elective Course) or Thermodynamics and Kinetic Theory	3
MATH 311	Differential Equations for Engineers	4
CHEM 106	General Chemistry II Lecture	3
CHEM 1106	General Chemistry II Recitation/Laboratory	2
	Credits	**15**
Junior		
Semester 1		
PHYS 321	Theory and Applications of Electricity and Magnetism	3

PHYS 401	Principles and Application of Modern Optics	3
PHYS 1401	Optics Recitation/Laboratory	1
CHEM 305	Physical Chemistry I (or Physics Supportive Elective Course (see requirements))	3
CHEM 3305	Physical Chemistry I Recitation/Laboratory	2
General Education Tier II Course		3
	Credits	**15**
Semester 2		
PHYS 307 or PHYS 404	Principles of Electronics Lecture (Physics Restricted Elective Course) or Nuclear Radiation: Theory and Applications	3
CHEM 306	Physical Chemistry II, Lecture	3
CHEM 3306	Physical Chemistry II Recitation/Laboratory (Physics Supportive Elective Course)	2
General Education Tier II Course		3
General Education Tier II Course		3
	Credits	**14**
Senior		
Semester 1		
PHYS 405	Introduction to Quantum Mechanics	3
MATH 330	Mathematical Statistics I (or Physics Supportive Elective Course (see requirements))	3
General Education Tier II Course		3
General Education Tier II Course		3
Elective or Minor Course		3
	Credits	**15**
Semester 2		
PHYS 410	Classical Mechanics	4
Physics Restricted Elective Course (see requirements)		3
General Education Tier II Course		3
General Education Tier III Course		3
Elective or Minor Course		3
	Credits	**16**
	Total Credits	**122**

[1] Courses are part of the General Education program and may be used to simultaneously satisfy a General Education Mode of Inquiry requirement.

Student Learning Outcomes

Upon completion of the Applied Physics BS program, students will be able to:

1. Demonstrate knowledge of the factual and theoretical basis of physics including Newton's Laws of motion, conservation laws, E&M and Quantum Mechanics.
2. Demonstrate understanding of scientific inquiry and explain how scientific knowledge is discovered and validated.
3. Apply quantitative reasoning to describe or explain phenomena in the natural world.
4. Demonstrate knowledge of mathematical tools and their applications to understanding physics systems.
5. Communicate scientific information based on original research or literature review.
6. Demonstrate preparedness to enter the work force or Graduate School.