

APPLIED PHYSICS, B.S.

Mission

The mission of the Bachelor of Science in Applied Physics is to train and mentor students to become skilled scientists who will glorify God and be good stewards of His creation as they serve others in industry, research, and academia.

Degree Program

A Bachelor of Science degree in Applied Physics is offered upon completion of the University baccalaureate requirements and the departmental specific requirements.

Learning Outcomes

Program Learning Outcomes

Upon completion of the Bachelor of Science in Applied Physics, students will be able to:

1. Demonstrate an understanding of the foundational principles of applied physics (ULO 1).
2. Demonstrate an ability to solve quantitative, qualitative, and technical problems related to applied physics (ULO 1).
3. Demonstrate safe laboratory technique, proper use of appropriate equipment, and suitable results and data analysis (ULO 1).
4. Demonstrate an ability to obtain and use appropriate engineering and physics related literature and resource materials.(ULO 1).
5. Summarize the key issues in science and faith and recognize the harmony possible while studying God's creation (ULO 1, 2, and 3).

Each Program Learning Outcome (PLO) listed above references at least one of the University Learning Outcomes (ULO 1, 2, 3), which may be found in the General Information (<http://catalog.biola.edu/general-information/>) section of this catalog.

Requirements

GPA Requirement

To continue in the program a student is required to have a cumulative GPA of 2.5 or higher in their first year of chemistry, physics and/or math courses taken at Biola. Depending on the major, these courses may include: CHEM 105, MATH 105, MATH 106, PHSC 132, PHSC 134, PHSC 233, PHSC 237.

Integration Seminar Requirement

Students enrolled in the Bachelor of Science in Applied Physics degree program are required to take BBST 465 as 'Christianity and the Natural Sciences,' or another approved Integration Seminar topic (see advisor).

Curriculum Requirements

Code	Title	Credits
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Program-Specific Core Curriculum Courses

Applied Physics majors automatically meet the Core Curriculum requirement of 6 credits of science and mathematics. The foreign language requirement is met by two years in high school or 4 credits of college foreign language.

Program Courses (57 credits plus 6 program elective credits)

CHEM 105	General Chemistry I	4
CHEM 106	General Chemistry II	4
MATH 105	Calculus I	4
MATH 106	Calculus II	4
MATH 205	Calculus III	4
MATH 291	Linear Algebra	3
MATH 335	Ordinary Differential Equations	3
PHSC 124	Data Analysis and Presentation	1
PHSC 132	General Physics I: Mechanics and Heat	3
PHSC 134	General Physics I Laboratory	1
PHSC 233	General Physics II: Electricity and Magnetism	3
PHSC 237	General Physics II Laboratory	1
PHSC 234	General Physics III: Waves, Optics and Modern Physics	4
PHSC 311	Computer Techniques in Science and Engineering	3
PHSC 321	Circuits and Instrumentation I	5
PHSC 322	Circuits and Instrumentation II	3
PHSC 336	Mathematical Methods in Physics	3
PHSC 460	Capstone Seminar	1
PHSC 480	Advanced Physics Laboratory	3
Select a minimum of 6 upper-division credits from the following:		6
PHSC 313	Statics	
PHSC 314	Mechanics of Materials	
PHSC 316	Dynamics	
PHSC 318	Classical Mechanics	
PHSC 331	Thermodynamics	
PHSC 340	Electrodynamics	
PHSC 352	Fundamentals of Materials Science	
PHSC 412	Introduction to Quantum Mechanics	
PHSC 420	Directed Research or Internship	
PHSC 450	Special Topics in Physical Science	
CHEM 301	Organic Chemistry I	
CHEM 311	Laboratory in Organic Chemistry I	
CHEM 302	Organic Chemistry II	
CHEM 312	Laboratory in Organic Chemistry II	
MATH 318	Biostatistics	
MATH 440	Complex Variables	
CSCI 106	Data Structures	
CSCI 220	Computer Organization and Assembly Language Programming	
CSCI 230	Programming Languages	

Total Credits 63

Course Sequence

NOTE: The course sequence table is designed by the major department and is one way that the classes will work out properly in sequence for your major. However, there are alternative or flexible ways to rotate some of the classes within the same year/level and sometimes between year

levels. Please contact your major department advisor to discuss flexible alternatives in scheduling the sequence of your classes.

Taking coursework during the summer session may also be an option to accelerate your degree path.

See Core Curriculum Program section (<http://catalog.biola.edu/general-information/undergraduate-requirements-policies/#text>) for a list of approved Core Curriculum courses.

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First Year

Fall	Credits	Spring	Credits
BBST 103 or 165	3	BBST 103 or 165	3
MATH 105	4	BBST 209	3
PHSC 124	1	MATH 106	4
PHSC 132	3	PHSC 233	3
PHSC 134	1	PHSC 237	1
ENGL 100 or 112	3	Behavioral Science (see Core Curriculum)	3
GNST 102	1		
	16		17

Total Credits 33

Second Year

Fall	Credits	Spring	Credits
BBST 251	3	BBST 210	3
MATH 205	4	BBST 354	3
PHSC 234	4	MATH 335	3
Foreign Language (see Core Curriculum)	4	PHSC 321	5
		Communication (see Core Curriculum)	3
	15		17

Total Credits 32

Third Year

Fall	Credits	Spring	Credits
BBST 306, 316, or 326	3	BBST 365	3
ENGL 313	3	HIST 200, 201, or POSC 225	3
MATH 291	3	PHSC/CHEM/MATH/ CSCI Elective (upper- division)	3
PHSC 311	3	PHSC 322	3
PHSC 336	3	Fine Arts (see Core Curriculum)	3
Writing Competency Requirement		KNES 107	1
		Graduation Petition due in Registrar's Office	
	15		16

Total Credits 31

Fourth Year

Fall	Credits	Spring	Credits
BBST 300/400 Bible Elective	3	BBST 465 (Christianity & Nat Sci - required)	3
PHSC/CHEM/MATH/ CSCI Elective (upper- division)	3	CHEM 106	4
CHEM 105	4	PHSC 460	1
Literature (see Core Curriculum)	3	PHSC 480	3

KNES Activity (see Core
Curriculum)

1 Philosophy (see Core
Curriculum)

3

14

14

Total Credits 28