

PHYSICS, B.S.

Mission

The mission of the Bachelor of Science in Physics (<https://www.biola.edu/degrees/u/physics-bs/>) 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 research, academia, and industry.

Degree Program

A Bachelor of Science degree in 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 Physics, students will be able to:

1. Demonstrate an understanding of the foundational principles of physics (ULO 1).
2. Demonstrate an ability to solve quantitative, qualitative, and technical problems related to physics. (ULO 1).
3. Demonstrate safe laboratory technique, proper use of appropriate equipment, and suitable results and data analysis (ULO 1).
4. Obtain and use appropriate 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 150, MATH 151, PHSC 132, PHSC 134, PHSC 233, PHSC 237.

Integration Seminar Requirement

Students enrolled in the Bachelor of Science in 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
Program-Specific Core Curriculum Courses		
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		

CHEM 105	General Chemistry I ¹	4
CHEM 106	General Chemistry II	4
MATH 150	Calculus I	4
MATH 151	Calculus II	4
MATH 250	Calculus III	4
MATH 335	Ordinary Differential Equations	3
PHSC 124	Data Analysis and Presentation	1
PHSC 132	General Physics I: Mechanics and Heat ²	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 318	Classical Mechanics	3
PHSC 321	Circuits and Instrumentation I	5
PHSC 336	Mathematical Methods in Physics	3
PHSC 340	Electrodynamics	3
PHSC 412	Introduction to Quantum Mechanics	3
PHSC 460	Capstone Seminar	1
PHSC 480	Advanced Physics Laboratory	3
Select at least 3 credits of upper-division Physics electives.		3
Program Course Requirements: 63 credits		
Core Curriculum Requirements ³		61
Total Credits		124

¹ The prerequisite for CHEM 105 is a passing score on the Chemistry Placement Exam or CHEM 107 with at least a "B-".

² The prerequisite for PHSC 132 is a passing score on the Physics Placement Exam or PHSC 092 with a grade of "B" or better or 4 or above on any Advanced Placement (AP) Physics.

³ See Core Curriculum Program section (<http://catalog.biola.edu/general-information/undergraduate-core-curriculum-program/>) for details.

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-core-curriculum-program/>) 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
ENGL 100 or 112	3 KNES 107	1
GNST 102	1 MATH 151	4
MATH 150	4 PHSC 233	3
PHSC 124	1 PHSC 237	1
PHSC 132	3 Communication (see Core Curriculum)	3
PHSC 134	1	
	16	15

Total Credits 31

Second Year		
Fall	Credits Spring	Credits
BBST 209 or 210	3 BBST 209 or 210	3
MATH 250	4 BBST 251	3
PHSC 234	4 HIST 200, 201, or POSC 225	3
PHSC 311	3 MATH 335	3
Behavioral Science (See Core Curriculum)	3 PHSC 321	5
	17	17

Total Credits 34

Third Year		
Fall	Credits Spring	Credits
BBST 365	3 BBST 300/400 Bible Elective	3
CHEM 105	4 BBST 354	3
ENGL 313	3 CHEM 106	4
PHSC 336	3 PHSC 318	3
Philosophy (see Core Curriculum)	3 KNES Activity (see Core Curriculum)	1
Writing Competency Requirement	Graduation Petition due in Registrar's Office	
	16	14

Total Credits 30

Fourth Year		
Fall	Credits Spring	Credits
BBST 300/400 Bible Elective	3 BBST 465 (Christianity & Nat Sci - required)	3
PHSC 340	3 PHSC 412	3
Physics Elective (upper-division) ¹	3 PHSC 460	1
Foreign Language (see Core Curriculum) ²	4 PHSC 480	3
Literature (see Core Curriculum)	3 Fine Arts (see Core Curriculum)	3
	16	13

Total Credits 29

¹ See catalog for electives in area of specialization. Twenty-eight upper-division credits in Physics or Math.

² If you have taken 2 years of the same foreign language in high school, you have fulfilled your foreign language requirement. Otherwise, contact the Modern Languages Department for placement test instructions to fulfill the 4-credit requirement.

Torrey Hhrs Seq

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First Year		
Fall	Credits Spring	Credits
HNRS 101	4 HNRS 105	4
HNRS 102	4 HNRS 106	4
MATH 150	4 KNES 107	1
GNST 102	1 MATH 151	4
PHSC 124	1 PHSC 233	3
PHSC 132	3 PHSC 237	1
PHSC 134	1	
	18	17

Second Year		
Fall	Credits Spring	Credits
HNRS 210	4 HNRS 230	4
HNRS 215	4 HNRS 231	4
MATH 250	4 MATH 335	3
PHSC 234	4 PHSC 321	5
KNES Activity (see Core Curriculum)	1	
	17	16

Third Year		
Fall	Credits Spring	Credits
HNRS 324	4 HNRS 337	4
HNRS 326	2 HNRS 339	2
PHSC 311	3 ENGL 313	3
PHSC 336	3 PHSC 318	3
	Foreign Language (see Core Curriculum)	4
	12	16

Fourth Year		
Fall	Credits Spring	Credits
HNRS 443	4 HNRS 458	4
BBST 465	3 CHEM 106	4
CHEM 105	4 PHSC 412	3
PHSC 340	3 PHSC 460	1
PHSC Elective (upper-division)	3 PHSC 480	3
	17	15

Total Credits 128