PHYSICAL SCIENCE, B.S.

Mission
The mission of the Bachelor of Science in Physical Sciences 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,
education, and industry.

Degree Program
A Bachelor of Science degree in Physical Science is offered upon
completion of the University baccalaureate requirements and the
departmental requirements.

Learning Outcomes
Program Learning Outcomes
Upon completion of the Bachelor of Science in Physical Science, students
will be able to:

1. Demonstrate an understanding of the foundational principles related
to the physical sciences (ULO 1).
2. Demonstrate an ability to solve quantitative and conceptual technical
problems related to the physical sciences (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 literature and resource materials related
to the physical sciences (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 Physical Science 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
CHEM 105 General Chemistry I 4
CHEM 106 General Chemistry II 4
MATH 105 Calculus I 4
MATH 106 Calculus II 4
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 460 Capstone Seminar 1
Select 30 credits (23 credits if choosing a Secondary
Instruction concentration) of Chemistry, Physics, Computer
Science, or Math courses; of which 23 credits must be upper-
division. Depending on the student’s interests in science and
career goals, the following are recommended electives:

BIOS 103 Introduction to Environmental Science
CHEM 301 Organic Chemistry I
CHEM 302 Organic Chemistry II
CHEM 311 Laboratory in Organic Chemistry I
CHEM 312 Laboratory in Organic Chemistry II
CHEM 321 Basic Organic and Biochemistry
& CHEM 322 and Basic Organic and Biochemistry Lab
MATH 205 Calculus III
MATH 291 Linear Algebra
MATH 335 Ordinary Differential Equations
PHSC 103 Geology
PHSC 110 Astronomy
PHSC 311 Computer Techniques in Science and
Engineering
PHSC 313 Statics
PHSC 321 Circuits and Instrumentation I
PHSC 322 Circuits and Instrumentation II

Total Credits 60

Concentrations
Secondary Instruction
In addition to the Core Requirements listed above, students must
complete the following requirements for a total of 70 credits.

Concentration-Specific Core Curriculum (GE) Courses
The following course is required to fulfill the Core Curriculum
(GE) requirement for Behavioral Science:

PSYC 200 Introduction to Psychology

Concentration Courses

Code Title Credits
LEDU 301 Introduction to Teaching 3
LEDU 330 Psychological Foundations of Education 3
LEDU 341 Methods of Teaching Linguistically Diverse Students 3
LEDU 425 Secondary Content Area Reading 3
LEDU 433 Single Subject Pedagogy 2
Student teaching (12 credits) may be completed at the graduate level and is not required for undergraduate graduation.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>LEDU 450</td>
<td>Secondary Student Teaching I</td>
<td>1</td>
</tr>
<tr>
<td>LEDU 452</td>
<td>Secondary Student Teaching II</td>
<td>1</td>
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</tbody>
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### Elective Courses

Select 23 credits of upper-division courses in Physics, Chemistry, Computer Science, or Math. Depending on the student’s interests in science, the courses listed under Elective Requirements above are recommended electives. 

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<tr>
<td>LEDU 438</td>
<td>Secondary Curriculum, Differentiation, and Assessment</td>
<td>3</td>
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Total Credits 40

1 Although it does not count toward the major, students may elect to take PHSC 326 as a formal review and preparation for the CSET exams.

### Secondary Education Minor

The School of Education offers a state-approved professional teacher preparation program which leads to a preliminary single subject teaching credential in the state of California. The Single Subject credential authorizes the holder to teach the specific subject named on the credential. In most cases individuals with this credential will be offered employment in middle schools and high schools. The teacher preparation program can be added as a minor to any major; however, candidates are advised to major in the subject area they wish to teach. Candidates who take the following 17 credits qualify for a Secondary Education Minor:

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<td>LEDU 425</td>
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<td>3</td>
</tr>
<tr>
<td>LEDU 433</td>
<td>Single Subject Pedagogy</td>
<td>2</td>
</tr>
<tr>
<td>LEDU 438</td>
<td>Secondary Curriculum, Differentiation, and Assessment</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Credits 17

The Professional Teacher Preparation Program leading to a California Teaching Credential at Biola University is subject to change in response to new legislation. See a credential analyst in the School of Education for current information on completing the requirements for a teaching credential. Students must consult with both their major advisor and a School of Education advisor.