

Major Course Requirements

A minimum of 100 hours (29 upper-division hours)

This major provides appropriate preparation for teaching science at the secondary level. The core requirement of 65 quarter hours of course work corresponds to science subjects commonly taught in California public schools, and the emphasis treats the subject matter at a depth more than adequate for teaching the higher-level secondary science courses in physics. Emphases may also be obtained in biology or chemistry.

ASTR 115	Astronomy	5
ASTR 173	Meteorology	1
BIOL 111+112+113	Biological Foundations	5+5+5
BIOL 331	Marine Science	4
BIOL 355	Issues on Origins	3
CHEM 111+112+113	General Chemistry	5+5+5
GEOL 233	Geology	4
PHYS 390	History and Philosophy of Science	3

At least one of the following courses: 3

ENVR 360	Conservation Biology (3)	
ENVR 361	Energy & Climate Change (3)	
ENVR 362	Pollution & Environmental Quality (3)	

One of the following sequences: 4+4+4

PHYS 111+112+113	General Physics (4+4+4)*	
PHYS 211+212+213	Physics with Calculus (4+4+4)	

Physics Emphasis (35 hours)

MATH 131+132+133	Calculus I,II,III	4+4+4
PHYS 314	Elementary Modern Physics	4

At least one of the following courses: 4

ENGR 216	Circuit Theory (4)	
PHYS 265	Applied Physics (4)*	

At least 15 hours from the following: 15

(Including at least 12 upper-division hours)

Additional non-service PHYS courses		
CHEM 344	Nuclear Physics and Chemistry (3)	

Teaching Credential

Students desiring to enter a program of studies leading to a California teaching credential in science with a concentration in physics should take the either the B.S. degree in Biophysics or the B.S. degree in Natural Science, Physics Emphasis. Students will need to pass the science (physics concentration) portion of the CSET exam one quarter prior to doing full-time student teaching. Students are invited to discuss the program with their major advisor in the Physics Department.

Those who plan to teach on the secondary level should consult with the credential analyst in the Education Department and should become acquainted with the specific requirements for admission to and successful completion of the Secondary Teaching Credential on page EDUC-06.

Student Learning Outcomes

Students can:

- Demonstrate knowledge in the basic disciplines of natural science: biology, chemistry, and physics.
- Apply the scientific process, including conducting experiments and testing hypotheses.
- Demonstrate the ability to read, understand, and critically review scientific papers and presentations.
- Prepare oral and written reports in a standard scientific format.
- Recognize the relationship between structure and function at all levels: molecular, cellular, and organismal.
- Recognize the diversity of life and understand the ecological relationships between organisms and their environment.
- Develop an awareness of the opportunities available to teach science on the secondary level.
- Recognize the historical and current issues relating to special creation and evolution models of origins. Understand the theological and scientific implications of each model.

Occupational Information

What can I do with this major?

The Natural Science major is designed to meet the requirements of the California secondary teaching credential in biology, chemistry, and physics. Students who plan to teach at the secondary level should work closely with the Credential Analyst in the Education Department and should become acquainted with specific requirements as outlined in the Education section of the catalog.

Additional Education Required?

For students interested in elementary and secondary teaching in California, a fifth year is required for a full credential. The fifth year program results in SDA Professional and/or California Clear Credentials.

Public Sector vs. Denominational

Elementary and Secondary-level teaching jobs in the United States, as well as overseas, are available in both the public sector and denominational circle.

Job Outlook

Job opportunities at elementary and secondary levels are strong because of a serious shortage of math and science teachers.

* Students who select the PHYS 111-112-113 sequence must complete PHYS 265 for the physics emphasis.

General Education Requirements

To view general education requirements for this major, please refer to page A-01, Summary of General Education Requirements: BS degree.

How to Construct Your Own Program

1. Counsel with your advisor.
2. Consider your aptitudes, interests, and available courses.
3. Schedule major courses and cognates first.
4. Fill the rest of your schedule with G.E. requirements.
5. For the freshman year include English, Religion, and PE courses. Also include Basic Algebra I+II unless waived by previous work.

What the Degree Includes

A total of 192 quarter hours including:

1. A minimum of 60 upper division hours.
2. General Education requirements.
3. Major requirements.
4. Minimum 2.0 GPA, overall and major.

For More Information

Physics Department
 Pacific Union College
 One Angwin Avenue
 Angwin, CA 94508

Physics Department (707) 965-6684
 Biology Department (707) 965-6633
 Chemistry Department (707) 965-7597

Sample Four-Year Program

This sample curriculum is designed to show you how a program may be constructed and to help you select a proper sequence of courses in the major. It is not likely that these courses can always be taken in the order given. Your advisor will help you design a personalized program of studies.

First and Second Years	F	W	S
General Chemistry	5	5	5
College English	-	4	4
Astronomy	-	4	-
Meteorology	1	-	-
Biological Foundation	5	5	5
General Physics or Physics with Calculus Emphasis, General Education, Credentials and Electives	4	4	4
	17	10	14
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	32	32	32

Third and Fourth Years	F	W	S
Geology	-	-	4
Environmental Science	3	-	-
Marine Science	4	-	-
Issues on Origins	-	3	-
History and Philosophy of Science	-	-	3
Emphasis, General Education, Credentials and Electives	25	29	25
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	32	32	32