

# PHYSICS BS

## More Information

### Advising Requirement

Advising is mandatory for this program. Consult your department advisor or program coordinator for information.

### E-advising Tools

Students are encouraged to use the interactive e-advising tools that have been designed to help them graduate within four years. These tools can be accessed through the Student Center.

The Department of Physics offers the Bachelor of Science in Physics with the choice of two options.

**The option in professional physics.** This option is designed to prepare students for graduate study or for professional careers in government, industry, and technical fields such as optics, electronics, data science, or materials science.

**The option in general physics.** Students intending to teach high-school physics should choose this option. It provides a streamlined path through the California teacher accreditation process and gives students a broad science-teaching foundation.

## Grading Requirement

All courses taken to fulfill program course requirements must be taken for a letter grade except those courses specified by the department as credit/no credit grading only.

## Course Requirements for the Major: 70-75 units

Completion of the following courses, or their approved transfer equivalents, is required of all candidates for this degree. Courses in this program may complete more than one graduation requirement.

Course	Title	Units
<b>Major Core</b>		
CHEM 111	General Chemistry I	4
MATH 120	Analytic Geometry and Calculus	4
MATH 121	Analytic Geometry and Calculus	4
MATH 220	Analytic Geometry and Calculus	4
MATH 260	Elementary Differential Equations	4
PHYS 109	Paths to Success in Physics	1
PHYS 204A	Physics for Students of Science and Engineering: Mechanics	4
PHYS 204B	Physics for Students of Science and Engineering: Electricity and Magnetism	4
PHYS 204C	Physics for Students of Science and Engineering: Heat, Wave Motion, Sound, Light, and Modern Topics	4
PHYS 300	Introduction to Modern Physics: Relativity and Quantum Theory	3
PHYS 327	Electronics for Scientists	4
PHYS 427W	Advanced Laboratory (W)	3
PHYS 492W	Communicating Physics (W)	3

### Major Option

Select one of the following options:	24-29
General Physics (p. 1)	
Professional Physics (p. 1)	

**Total Units** 70-75

## Major Option Course Requirements

Students must select one of the following options for completion of the major course requirements.

### The Option in General Physics: 29 units

This option fulfills all requirements for the Single Subject Teaching Credential in Science with a Concentration in Physics and a supplementary authorization in a second science. This option is also excellent preparation for students considering physics-related interdisciplinary fields. Students who choose this option should consult with their major advisor.

Course	Title	Units
<b>Course Requirements</b>		
BIOL 161	Principles of Ecological, Evolutionary, and Organismal Biology	4
BIOL 162	Principles of Cellular and Molecular Biology	4
ERTH 102	Physical Geology	3
ERTH 300W	Earth System Science (W)	3
PHYS 489T	Internship in Physics Teaching	3
<b>Breadth Requirements</b>		
Select any non-General Education courses in Chemistry (CHEM), Biology (BIOL), or Earth and Environmental Sciences (ERTH). All 12 units must be selected from one department.		12
<b>Total Units</b>		<b>29</b>

### The Option in Professional Physics: 24 units

Course	Title	Units
<b>Option Core</b>		
PHYS 301	Analytical Mechanics	3
PHYS 302	Electricity and Magnetism	3
PHYS 314	Methods of Theoretical Physics	3
PHYS 315	Thermal Physics	3
PHYS 435A	Quantum Mechanics I	3
<b>Elective Requirements</b>		
Select three of the following:		9
MATH 361	Boundary Value Problems and Partial Differential Equations	
PHYS 312	Computational Physics	
PHYS 435B	Quantum Mechanics II	
PHYS 450	Optics	
PHYS/EECE 451	Lasers and Their Applications	
<b>Total Units</b>		<b>24</b>

## Electives Requirement

To complete the total units required for the bachelor's degree, select additional elective courses from the total University offerings. You should

consult with an advisor regarding the selection of courses which will provide breadth to your University experience and possibly apply to a supportive second major or minor.

See Bachelor's Degree Requirements (<https://catalog.csuchico.edu/undergraduate-requirements/bachelors-degree-requirements/>) for complete details on general degree requirements. A minimum of 39 units, including those required for the major, must be upper division.

## General Education Requirements: 48 units

See General Education (<https://catalog.csuchico.edu/colleges-departments/undergraduate-education/general-education/>) and the Class Schedule (<http://www.csuchico.edu/schedule/>) for the most current information on General Education Requirements and course offerings.

This major has approved GE modification(s). See below for information on how to apply these modification(s).

- PHYS 492W is an approved major course substitution for Upper-Division Scientific Inquiry and Quantitative Reasoning (UD-B).

## Diversity Course Requirements: 6 units

You must complete a minimum of two courses that focus primarily on cultural diversity. At least one course must be in U.S. Diversity (USD) and at least one in Global Cultures (GC). See Diversity Requirements (<https://catalog.csuchico.edu/undergraduate-requirements/diversity-requirements/>) for a full list of courses. Most courses taken to satisfy these requirements may also apply to General Education (<https://catalog.csuchico.edu/colleges-departments/undergraduate-education/general-education/>).

## Upper-Division Writing Requirement

Writing Across the Curriculum (EM 17-009 (<http://www.csuchico.edu/prs/EMs/2017/17-009.shtml/>)) is a graduation requirement and may be demonstrated through satisfactory completion of four Writing (W) courses, two of which are designated by the major department. See Mathematics/Quantitative Reasoning and Writing Requirements (<https://catalog.csuchico.edu/undergraduate-requirements/mathematicsquantitative-reasoning-writing-requirements/>) for more details on the four courses. The first of the major designated Writing (W) courses is listed below.

- PHYS 492W Communicating Physics (W)

The second major-designated Writing course is the Graduation Writing Assessment Requirement (GW) (EO 665 (<https://calstate.policystat.com/policy/9585618/latest/>)). Students must earn a C- or higher to receive GW credit. The GE Written Communication (A2) (<https://catalog.csuchico.edu/colleges-departments/undergraduate-education/general-education/#A2>) requirement must be completed before a student is permitted to register for a GW course.