

PHYSICS BS

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

The option in applied physics. This option is designed for students who are interested in broadening their field of study to include physics and another discipline, including double majors and those intending to become high school physics teachers through the single-subject teaching credential program.

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.

Advising Requirement

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

E-advising Tools

Use the interactive e-advising tools designed to help students graduate within four years. These tools can be accessed through the Student Center in the Portal (<https://portal.csuchico.edu>).

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 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
Major Core		
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
Applied Physics (p. 1)	
Professional Physics (p. 2)	

Total Units	70
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Major Option Course Requirements

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

The Option in Applied Physics: 24 units

Course	Title	Units
Select 24 units from the following courses with at least 9 units from Astronomy (ASTR) or Physics (PHYS) and no more than 4 units from 100 or 200 level courses.		
ASTR 361	Astronomy - Stars and Telescopes	
ASTR 365	Astronomy - Galaxies and Cosmology	
CIVL 211	Statics	
CIVL 311	Strength of Materials	
CIVL 321	Fluid Mechanics	
CSCI 490	Capstone	
EDTE 302	Access and Equity in Education	
EDTE 530	Fundamentals of Teaching Practice for Secondary Teachers	
EECE 211	Linear Circuits I	
EECE 311	Linear Circuits II	
EECE 315	Electronics I	
EECE 316	Electronics II	
EECE 375	Fields and Waves	
ENGL 471	Intensive Theory and Practice of Second Language Acquisition	
ERTH 170	Atmospheric Science	
ERTH 304	Atmospheric Science II	
ERTH 370W	Energy in the Human Environment (W)	
ERTH 380	Hydrology	
ERTH 382	Environmental Field Methods	
ERTH 435	Boundary Layer Meteorology	
ERTH 440	Environmental Sensing	
ERTH 460	Water Resources Management	
ERTH 470	Renewable Energy	
MATH 235	Elementary Linear Algebra	
MATH 314	Probability and Statistics for Science and Technology	
MATH 330W	Methods of Proof (W)	
MATH 360	Ordinary Differential Equations	
MATH 361	Boundary Value Problems and Partial Differential Equations	
MATH 385	Introduction to Data Science	
MATH 420W	Advanced Calculus (W)	
MATH 456	Applied Statistical Methods II	
MATH 461	Numerical Analysis	
MATH 465	Introduction to Complex Variables	
MATH 472	Introduction to Chaotic Dynamical Systems	

MATH 485	Advanced Topics in Data Science	
MECH 210	Materials Science and Engineering	
MECH 320	Dynamics	
MECH 332	Thermodynamics	
MECH 338	Heat Transfer	
MECH 410	Advanced Materials Science and Engineering	
MECH 424	Mechanical Vibrations	
MECH 432	Energy Systems	
MECH 435	Low Speed Aerodynamics	
PHYS 301	Analytical Mechanics	
PHYS 302	Electricity and Magnetism	
PHYS 312	Computational Physics	
PHYS 314	Methods of Theoretical Physics	
PHYS 315	Thermal Physics	
PHYS 435A	Quantum Mechanics I	
PHYS 435B	Quantum Mechanics II	
PHYS 450	Optics	
PHYS 451	Lasers and Their Applications	
PHYS 489T	Internship in Physics Teaching	
Total Units		24

The Option in Professional Physics: 24 units

Course	Title	Units
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
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	
Total Units		24

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: 43 units

See General Education (<https://catalog.csuchico.edu/colleges-departments/undergraduate-education-academic-success/general-education/#gerequirementstext>) 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 Physical and Biological Sciences (UD-5).

American Institutions Course Requirements: 6 units

The American Institutions graduation requirement, as mandated in Title 5, Section 40404 (<https://govt.westlaw.com/calregs/Document/I56C041434C6911EC93A8000D3A7C4BC3/?viewType=FullText&originationContext=documenttoc&transitionType=CategoryPage>) requires that students satisfactorily complete courses in United States history, the US Constitution, and government and American ideals (including California state and local government). At Chico State, HIST 130 meets the US history requirement (US-1), and POLS 155 meets the US Constitution and government requirement (US-2) and the California state and local government requirement (US-3). POLS 155 also fulfills three units of GE Area 4, Social and Behavioral Sciences. See Bachelor's Degree Requirements (<https://catalog.csuchico.edu/undergraduate-requirements/bachelors-degree-requirements/#amin>) for more information.

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 US 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. Many courses taken to satisfy these requirements may also apply to General Education (<https://catalog.csuchico.edu/colleges-departments/undergraduate-education-academic-success/general-education/>).

Upper-Division Writing Requirement

Writing Across the Curriculum (EM 17-009 (<https://www.csuchico.edu/pres/em/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 Writing and Math Requirements (<https://catalog.csuchico.edu/undergraduate-requirements/writing-math-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 English Composition (1A) (<https://catalog.csuchico.edu/colleges-departments/undergraduate-education-academic-success/general-education/#1A>) requirement must be completed before a student is permitted to register for a GW course.