CalPolyPomona

Name:
Plan: **Physics, B.S.**
SubPlan/Option: **General**
Min. Units Required: **120 units**

2020-2021 University Catalog
Degree Curriculum Sheet

Major Required — 44 units

CHM1210 - General Chemistry I (3) (B1)
CHM1210L - General Chemistry Laboratory I (1) (B3)
MAT1140 - Calculus I (4) (B4)
MAT1150 - Calculus II (4) (B4)
MAT2010 - Introduction to Computational Methods in Mathematics (2)
MAT2010L - Introduction to Computational Methods in Mathematics Laboratory (1)
MAT2140 - Calculus III (4)
MAT2250 - Linear Algebra with Applications to Differential Equations (4)
PHY1510 - Introduction to Newtonian Mechanics (3) (B1)
PHY1510L - Newtonian Mechanics Laboratory (1) (B3)
PHY1520 - Introduction to Electromagnetism and Circuits (3)
PHY1520L - Introductory Laboratory on Electromagnetism and Circuits (1)
PHY2530 - Introduction to Electromagnetic Radiation and Special Relativity (3)
PHY2530L - Introductory Laboratory on Electromagnetic Radiation and Special Relativity (1)
PHY2540 - Introduction to Thermal and Quantum Physics (3)
PHY2540L - Introductory Laboratory on Thermal and Quantum Physics (1)
PHY3600 - Mathematical Methods of Physics I (3)
PHY3600A - Mathematical Methods of Physics I Recitation Activity (1)
PHY4630 - Undergraduate Seminar (1)

Subplan/Option Required — 16 units

PHY3210 - Advanced Classical Mechanics (3)
PHY3210A - Advanced Classical Mechanics Recitation Activity (1)
PHY4010 - Quantum Mechanics I (3)
PHY4010A - Quantum Mechanics I Recitation Activity (1)
PHY4140 - Electricity and Magnetism I (3)
PHY4140A - Electricity and Magnetism I Recitation Activity (1)
PHY4330 - Thermal and Statistical Physics (3)
PHY4330A - Thermal and Statistical Physics Recitation Activity (1)

Subplan/Option Electives — 14-15 units

Any combination of courses listed below will satisfy the required 14-15 units. Emphases are listed to provide guidance for helping students to choose courses of interest that best fit your career goals, but there is no requirement for choosing a specific emphasis for fulfilling these units.

Astrophysics Emphasis — 15 units

Emphasis Recommended — 11 units

AST3240 - Observational Astronomy (2)
AST3240A - Observational Astronomy Computer Activity (1)
AST4240 - Astrophysics I: Stars and Planetary Systems (3)
AST4240A - Astrophysics I Recitation Activity (1)
AST4250 - Astrophysics II: Galaxies and the Universe (3)
AST4250A - Astrophysics II Recitation Activity (1)

Emphasis Other — 4 units

An additional 4 units must be selected from the following list, with the proviso that students must take AT LEAST 2 units from PHY 4510A / PHY 4510L / PHY 4520A / PHY 4520L . Pairs of courses that must be taken together or in sequence are indicated with "and".

PHY3040 - Electronics for Scientists (2) ***and***
PHY3040L - Electronics for Scientists Laboratory (1)
OR
PHY4090 - Computational Physics (2) ***and***
PHY4090A - Computational Physics Activity (1)
OR
PHY4170 - Wave Optics (2) ***and***
PHY4170L - Wave Optics Laboratory (1)
OR
PHY4410 - Internship in Physics (1-2)
OR
PHY4510A - Advanced Laboratory Physics - Advanced Instrumentation Recitation Activity (1) ***and***
PHY4510L - Advanced Laboratory Physics - Advanced Instrumentation Laboratory (1)
OR
PHY4520A - Advanced Laboratory Physics - Contemporary Experiments Recitation Activity (1) ***and***
PHY4520L - Advanced Laboratory Physics - Contemporary Experiments Laboratory (1)

General Emphasis — 14 units

A minimum of 7 units must be selected from the following list, with the proviso that students must take AT LEAST 2 units from PHY 4510A / PHY 4510L / PHY 4520A / PHY 4520L . Pairs of courses that must be taken together or in sequence are indicated with "and".

AST3240 - Observational Astronomy (2) ***and***
AST3240A - Observational Astronomy Computer Activity (1)
OR
PHY3040 - Electronics for Scientists (2) ***and***
PHY3040L - Electronics for Scientists Laboratory (1)
OR
PHY4090 - Computational Physics (2) ***and***
PHY4090A - Computational Physics Activity (1)
OR
PHY4170 - Wave Optics (2) ***and***
PHY4170L - Wave Optics Laboratory (1)
OR
PHY4410 - Internship in Physics (1-2)
OR
PHY4610 - Senior Project I (1) ***and***
PHY4620 - Senior Project II (2)

Select 2 units (one pair of lab/activity courses) from the following list:

PHY4510A - Advanced Laboratory Physics - Advanced Instrumentation Recitation Activity (1)
and
PHY4510L - Advanced Laboratory Physics - Advanced Instrumentation Laboratory (1)
OR
PHY4520A - Advanced Laboratory Physics - Contemporary Experiments Recitation Activity (1) ***and***
PHY4520L - Advanced Laboratory Physics - Contemporary Experiments Laboratory (1)

The remaining elective units may be selected from any upper-division PHY or AST courses (except AST 3050 , AST 3420 , PHY 3010 , and PHY 3020) or other upper-division math, science, and engineering courses approved by the department.

Unrestricted Electives — 0-4 units

Select a sufficient number of courses so that the total from "Major Required", "Subplan/Option Electives", "GE", and "Unrestricted Electives" is at least 104 units.

General Education Requirements — 48 Units

Students should consult the Academic Programs website
https://www.cpp.edu/~academic-programs/general-education-course-listings.shtml
for current information regarding this requirement. Unless specific courses are required, please refer to the list of approved courses under General Education Requirements, Areas A through E.

Area A. English Language Communication and Critical Thinking (9 units)
At least 3 units from each sub-area
1. Oral Communication
2. Written Communication
3. Critical Thinking

Area B. Scientific Inquiry and Quantitative Reasoning (12 units)
At least 3 units from B1, B2, B4, and B5 including 1 unit of lab from B1 or B2 to fulfill B3
1. Physical Sciences
2. Life Sciences
3. Laboratory Activity
4. Mathematics/Quantitative Reasoning
5. Science and Technology Synthesis

Area C. Arts and Humanities (12 units)
At least 3 units from each sub-area and 3 additional units from sub-areas 1 and/or 2
1. Visual and Performing Arts
2. Literature, Modern Languages, Philosophy and Civilization
3. Arts and Humanities Synthesis

Area D. Social Sciences (12 units)
At least 3 units from each sub-area
1. U.S. History and American Ideals
2. U.S. Constitution and California Government
3. Social Sciences: Principles, Methodologies, Value Systems, and Ethics
4. Social Science Synthesis

Area E. Lifelong Learning and Self-Development (3 units)

Interdisciplinary General Education — 21 Units

An alternate pattern for partial fulfillment of GE Areas A, C, and D available for students is the Interdisciplinary General Education (IGE) program. Students should see an advisor for specific GE coursework required by their major. Please refer to the University Catalog General Education Program section for additional information.

How IGE fulfills General Education Requirements:

Year	*Completion of IGE Courses*	*Satisfies GE Requirements*
First	*IGE 1100, IGE 1200*	*A2 and C2*
Second/Third	*IGE 2100, IGE 2200*	*C1 and C2*
	IGE 2300, IGE 2400	*D1 and D3*
Third/Fourth	*IGE 3100*	*C3 or D4*

American Institutions — 6 Units

Courses that satisfy this requirement may also satisfy GE Area D1 and D2.

American Cultural Perspectives Requirement — 3 Units

Refer to the University Catalog General Education Program section for a list of courses that satisfy this requirement. Course may also satisfy major, minor, GE, or unrestricted elective requirements.

Graduation Writing Test

All persons who receive undergraduate degrees from Cal Poly Pomona must pass the Graduation Writing Test (GWT). The test must be taken by the semester following completion of 60 units for undergraduates.