CalPolyPomona

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

2021-2022 University Catalog Degree Curriculum Sheet

Major Required — 41 units

CHM1210 - General Chemistry I (3) (B1)
CHM1210L - General Chemistry Laboratory I (1) (B3)
MAT1140 - Calculus I (4) (B4)
MAT1150 - Calculus II (4) (B4)
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 (2)
PHY2530A - Electromagnetic Radiation and Special Relativity Recitation Activity (1)
PHY2530L - Introductory Laboratory on Electromagnetic Radiation and Special Relativity (1)
PHY2540 - Introduction to Thermal and Quantum Physics (2)
PHY2540A - Thermal and Quantum Physics Recitation Activity (1)
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

BIO1210 - Foundations of Biology: Energy, Matter, and Information (3) (B2)
BIO1210L - Foundations of Biology: Energy, Matter, and Information Laboratory (1) (B3)
BIO1220 - Foundations of Biology: Evolution, Ecology, and Biodiversity (3)
BIO1220L - Foundations of Biology: Evolution, Ecology, and Biodiversity Laboratory (1)
CHM1220 - General Chemistry II (3) (B1)
CHM1220L - General Chemistry Laboratory II (1) (B3)
PHY4330 - Thermal and Statistical Physics (3)
PHY4330A - Thermal and Statistical Physics Recitation Activity (1)

Subplan/Option Electives — 22 units

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)

Select 4 units (one pair of lecture/activity courses) from the following list:
PHY3210 - Advanced Classical Mechanics (3) ***and***
PHY3210A - Advanced Classical Mechanics Recitation Activity (1)
OR
PHY4010 - Quantum Mechanics I (3) ***and***
PHY4010A - Quantum Mechanics I Recitation Activity (1)
OR
PHY4140 - Electricity and Magnetism I (3) ***and***
PHY4140A - Electricity and Magnetism I Recitation Activity (1)

Select 3 units from the following list:
CS1260 - Python for Beginners (3)
OR
MAT2010 - Introduction to Computational Methods in Mathematics (2) ***and***
MAT2010L - Introduction to Computational Methods in Mathematics Laboratory (1)

Select 3 units (one pair of courses) from the following list:
PHY3040 - Electronics for Scientists (2) ***and***
PHY3040L - Electronics for Scientists Laboratory (1)
OR
PHY3440 - Applied Optics (2) ***and***
PHY3440A - Computational Activities in Applied Optics Activity (1)
OR
PHY4090 - Computational Physics (2) ***and***
PHY4090A - Computational Physics Activity (1)
OR
PHY4170 - Wave Optics (2) ***and***
PHY4170L - Wave Optics Laboratory (1)
OR
PHY4610 - Senior Project I (1) ***and***
PHY4620 - Senior Project II (2)

Select 10 units from the following list, with the provisions that at least 1 unit must be a lab class, at least 3 units must be upper-division, and at least 3 units must be from biology. Paired corequisite courses are indicated via "and" in the list:
BIO2060 - Basic Microbiology (3) ***and***
BIO2060L - Basic Microbiology Laboratory (1)

BIO2340 - Human Anatomy (3) ***and***
BIO2340L - Human Anatomy Laboratory (1)

BIO2350 - Human Physiology (3) ***and***
BIO2350L - Human Physiology Laboratory (1)

BIO2400 - Genetics (3)
BIO3220 - Cell and Molecular Biology (3)

BIO4020 - Developmental Biology (3) ***and***
BIO4020L - Developmental Biology Laboratory (1)

BIO4100 - Biophysics (3)
PHY4100 - Biophysics (3)

BIO4190 - Neuroscience I: Cell and Molecular Processes (3) ***and***
BIO4190L - Neuroscience I: Cell and Molecular Processes Laboratory (1)

BIO4240 - Neuromuscular Physiology (3)
BIO4200 - Neuroscience II: Neural Systems (3)

BIO4320 - Molecular Biology Techniques (3) ***and***
BIO4320L - Molecular Biology Techniques Laboratory (1)

BIO4360 - Recombinant DNA and Protein Technology (3) ***and***
BIO4360L - Recombinant DNA and Protein Technology Laboratory (1)

BIO4380 - Bioinformatics (2) ***and***
BIO4380L - Bioinformatics Laboratory (2)

BIO4450 - Physiology I: Cells (3) ***and***
BIO4450L - Physiology I: Cells Laboratory (1)

BIO4460 - Physiology II: Systems (3) ***and***
BIO4460L - Physiology II: Systems Laboratory (1)

BIO4660 - Microbial Physiology (3) ***and***
BIO4660L - Microbial Physiology Laboratory (1)

BIO4670 - General Virology (3) ***and***
BIO4670L - General Virology Laboratory (1)

CHM2010 - Elements of Organic Chemistry (3) ***and***
CHM2010L - Elements of Organic Chemistry Laboratory (1)

CHM2600 - Introduction to Organic Molecular Modeling (3)
CHM3110 - Classical Physical Chemistry (3)
CHM3120 - Quantum Physical Chemistry (3)

CHM3140 - Organic Chemistry I (4) ***and***
CHM3140L - Organic Chemistry Laboratory I (1)

CHM3210 - Elements of Biochemistry (3)
OR
CHM3270 - Biochemistry I (3) ***and***
CHM3270L - Biochemistry Laboratory I (1)

CHM3280 - Biochemistry II (3) ***and***
CHM3280L - Biochemistry Laboratory II (1)

CHM4210 - Solution Equilibria in Analytical Chemistry (2)

Unrestricted Electives — 0-2 units

Select a sufficient number of courses so that the total from " Major Required", "Subplan/Option Required", "GE", and "Unrestricted Electives" is at least 98 units.

General Education Requirements — 48 Units

Students should view their Degree Progress Report (DPR) for information regarding their General Education requirements. Unless specific GE courses are required for their major, please refer to the list of approved courses in the General Education Program in the University Catalog, catalog.cpp.edu. When viewing the catalog, students should select the catalog year associated with the GE requirements listed in their Degree Progress Report.

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 (9 units)
At least 3 units from each sub-area
1. U.S. History and American Ideals
2. U.S. Constitution and California Government
4. Social Science Synthesis

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

Interdisciplinary General Education — 18 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 2150, IGE 2250*	*D1 and C2*
	IGE 2350	*C1*
	IGE 3100	*C3 or D4*

American Institutions — 6 Units

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

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.