

**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**

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 19 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 (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 (2) **and**  
 BIO2340L - Human Anatomy Laboratory (2)  
  
 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 101 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.