

<p>Major Required 41 units</p> <p>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)</p>	<p>PHY4520L - Advanced Laboratory Physics - Contemporary Experiments Laboratory (1)</p> <p>General Emphasis 14 units</p> <p>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)</p> <p>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)</p> <p>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)</p> <p>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.</p>	<p>General Education Requirements 48 Units</p> <p>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.</p> <p>Area A. English Language Communication and Critical Thinking (9 units) <i>At least 3 units from each sub-area</i> 1. Oral Communication 2. Written Communication 3. Critical Thinking</p> <p>Area B. Scientific Inquiry and Quantitative Reasoning (12 units) <i>At least 3 units from B1, B2, B4, and B5 including 1 unit of lab from B1 or B2 to fulfill B3</i> 1. Physical Sciences 2. Life Sciences 3. Laboratory Activity 4. Mathematics/Quantitative Reasoning 5. Science and Technology Synthesis</p> <p>Area C. Arts and Humanities (12 units) <i>At least 3 units from each sub-area and 3 additional units from sub-areas 1 and/or 2</i> 1. Visual and Performing Arts 2. Literature, Modern Languages, Philosophy and Civilization 3. Arts and Humanities Synthesis</p> <p>Area D. Social Sciences (9 units) <i>At least 3 units from each sub-area</i> 1. U.S. History and American Ideals 2. U.S. Constitution and California Government 4. Social Science Synthesis</p> <p>Area E. Lifelong Learning and Self-Development (3 units) Area F. Ethnic Studies (3 units)</p>															
<p>Subplan/Option Required 16 units</p> <p>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)</p>	<p>Subplan/Option Electives 14-18 units</p> <p>Any combination of courses listed below will satisfy the required 14-18 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.</p>	<p>Interdisciplinary General Education 18 Units</p> <p>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.</p> <p><i>How IGE fulfills General Education Requirements:</i></p> <table border="1"> <thead> <tr> <th>Year</th> <th>Completion of IGE Courses</th> <th>Satisfies GE Requirements</th> </tr> </thead> <tbody> <tr> <td>First</td> <td>IGE 1100, IGE 1200</td> <td>A2 and C2</td> </tr> <tr> <td>Second/Third</td> <td>IGE 2150, IGE 2250</td> <td>D1 and C2</td> </tr> <tr> <td></td> <td>IGE 2350</td> <td>C1</td> </tr> <tr> <td></td> <td>IGE 3100</td> <td>C3 or D4</td> </tr> </tbody> </table>	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
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															
<p>Astrophysics Emphasis 18 units</p> <p><i>Emphasis Recommended</i> 11 units</p> <p>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)</p>	<p>Unrestricted Electives 0-7 units</p> <p>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.</p>	<p>Area B. Scientific Inquiry and Quantitative Reasoning (12 units) <i>At least 3 units from each sub-area</i> 1. Physical Sciences 2. Life Sciences 3. Laboratory Activity 4. Mathematics/Quantitative Reasoning 5. Science and Technology Synthesis</p> <p>Area C. Arts and Humanities (12 units) <i>At least 3 units from each sub-area and 3 additional units from sub-areas 1 and/or 2</i> 1. Visual and Performing Arts 2. Literature, Modern Languages, Philosophy and Civilization 3. Arts and Humanities Synthesis</p> <p>Area D. Social Sciences (9 units) <i>At least 3 units from each sub-area</i> 1. U.S. History and American Ideals 2. U.S. Constitution and California Government 4. Social Science Synthesis</p> <p>Area E. Lifelong Learning and Self-Development (3 units) Area F. Ethnic Studies (3 units)</p>															
<p>Emphasis Other 7 units</p> <p>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)</p> <p>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</p>	<p>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.</p>	<p>American Institutions 6 Units</p> <p>Courses that satisfy this requirement may also satisfy GE Area D1 and D2.</p> <p>Graduation Writing Test</p> <p>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.</p>															