# Bachelor of Arts in Physics - Quantitative Reasoning Category III/IV and ENG 114

120 Total Units Required  
Minimum Number of Units in the Major: 52

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Units</th>
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</thead>
<tbody>
<tr>
<td><strong>First Semester</strong></td>
<td></td>
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</tr>
<tr>
<td>ENG 114</td>
<td>Writing the First Year: Finding Your Voice (A2) ^1</td>
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<tr>
<td>MATH 197</td>
<td>Prelude to Calculus I (Prerequisite for MATH 226) ^2,3</td>
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<tr>
<td>GE Area A 4</td>
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<tr>
<td>GE Area C</td>
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<td>GE Area D</td>
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<td><strong>Units</strong></td>
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<tr>
<td><strong>Second Semester</strong></td>
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<tr>
<td>MATH 198</td>
<td>Prelude to Calculus II (Prerequisite for MATH 226, B4) ^2,3</td>
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<tr>
<td>GE Area A</td>
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<tr>
<td>GE Area C</td>
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<td>GE Area D</td>
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<td><strong>Units</strong></td>
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<td><strong>Third Semester</strong></td>
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<tr>
<td>MATH 226</td>
<td>Calculus I (Major Prerequisite, B4) ^2,3</td>
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<tr>
<td>GE Area B: Life Science (B2)</td>
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<td>GE Area D</td>
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<tr>
<td>SF State Studies or University Elective ^5</td>
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<td><strong>Units</strong></td>
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<td><strong>Fourth Semester</strong></td>
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<tr>
<td>MATH 227</td>
<td>Calculus II (Major Prerequisite)</td>
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<tr>
<td>PHYS 220 &amp; PHYS 222</td>
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<tr>
<td>GE Area D</td>
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<tr>
<td>GE Area C</td>
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<td><strong>Units</strong></td>
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<tr>
<td><strong>Fifth Semester</strong></td>
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<tr>
<td>MATH 228</td>
<td>Calculus III (Major Prerequisite)</td>
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<tr>
<td>PHYS 230 &amp; PHYS 232</td>
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<tr>
<td>GE Area UD-B: Upper-Division Physical and/or Life Sciences</td>
<td>(Consider SF State Studies Course)</td>
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<tr>
<td>SF State Studies or University Elective or MATH 325</td>
<td>(if selecting MATH 245) or Linear Algebra (if selecting MATH 376)</td>
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<td><strong>Sixth Semester</strong></td>
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<td>MATH 245 or MATH 376</td>
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<td><strong>Units</strong></td>
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<td><strong>Seventh Semester</strong></td>
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<tr>
<td>PHYS 320</td>
<td>Modern Physics I (Major Upper-Division Core)</td>
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<td>PHYS 321</td>
<td>Modern Physics Laboratory (Major Upper-Division Core)</td>
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<td>PHYS 330</td>
<td>Analytical Mechanics I (Major Upper-Division Core)</td>
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<td>PHYS 385</td>
<td>Introduction to Theoretical Physics I (Major Upper-Division Core)</td>
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<td>GE Area UD-D: Upper-Division Social Sciences (Consider SF State Studies Course)</td>
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<tr>
<td>PHYS 360</td>
<td>Electricity and Magnetism I (Major Upper-Division Core)</td>
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<td>PHYS 370</td>
<td>Thermodynamics and Statistical Mechanics (Major Upper-Division Core)</td>
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<tr>
<td>Major Elective (On advisement. PHYS 460 or PHYS 325 recommended.)</td>
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<td><strong>Ninth Semester</strong></td>
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<td>PHYS 491GW</td>
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<td>PHYS 695</td>
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<td><strong>Units</strong></td>
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</table>

**Total Units**: 120

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1. ENG 114 can only be taken if you complete Directed Self-Placement (DSP) and select ENG 114; if you choose ENG 104/ENG 105 through DSP you will satisfy A2 upon successful completion of ENG 105 in the second semester; multilingual students may be advised into alternative English courses.

2. Depending on courses completed through Early Start, students in Pathway/Category III or IV may be required to enroll in a support course to complement their Quantitative Reasoning/B4 requirement. There are multiple course options for this pathway. Before enrolling in a B4 course, students should verify their MATH Pathway/Category in their Student Center (http://cms.sfsu.edu/content/student-center). Information regarding the courses that correspond with your MATH Pathway/Category can be found on the Developmental Studies Office Website (http://developmentalstudies.sfsu.edu).

3. Category III Students with a grade of B or higher in high school pre-calculus in the past year may be able to enroll in MATH 226. Please see a department advisor.

4. To avoid taking additional units, it is recommended that you meet SF State Studies requirements (AERM, GP, ES, SJ) within your GE or major.

5. **Complementary Studies**

Upon completion of the B.A. in Physics program, students will have taken 12 units of Calculus courses that satisfy the Complementary Studies requirement for a B.A. degree. Students who have earned AA-T or AS-T degrees and are pursuing a similar B.A. degree at SF State are required to fulfill the Complementary Studies requirement as defined by the major department. Students should consult with a major advisor about how transfer units and/or SF State units can be applied to this requirement in order to ensure degree completion within 60 units.