# Bachelor of Science in Physics Roadmap

120 Total Units Required  
Minimum Number of Units in the Major: 71

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>First Semester</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH 226</td>
<td>Calculus I</td>
<td>4</td>
</tr>
<tr>
<td>GE Area A: Oral Communication (A1) or Critical Thinking (A3)</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>GE Area A: Written English Communication (A2)</td>
<td></td>
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</tr>
<tr>
<td>GE Area C: Arts (C1)</td>
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</tr>
<tr>
<td>GE Area C: Humanities: Literature (C3)</td>
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<tr>
<td><strong>Total Units</strong></td>
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<td>16</td>
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<tr>
<td><strong>Second Semester</strong></td>
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</tr>
<tr>
<td>MATH 227</td>
<td>Calculus II</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 220 &amp; PHYS 222</td>
<td>General Physics with Calculus I and General Physics with Calculus I Laboratory</td>
<td>4</td>
</tr>
<tr>
<td>GE Area A: Oral Communication (A1) or Critical Thinking (A3)</td>
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</tr>
<tr>
<td>GE Area A: Written English Communication II (A4)</td>
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</tr>
<tr>
<td>or Written English Communication (A2) Stretch II</td>
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</tr>
<tr>
<td><strong>Total Units</strong></td>
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<tr>
<td><strong>Third Semester</strong></td>
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</tr>
<tr>
<td>MATH 228</td>
<td>Calculus III</td>
<td>4</td>
</tr>
<tr>
<td>MATH 325</td>
<td>Linear Algebra</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 230 &amp; PHYS 232</td>
<td>General Physics with Calculus II and General Physics with Calculus II Laboratory</td>
<td>4</td>
</tr>
<tr>
<td>GE Area B: Life Science (B2)</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>GE Area D: U.S. History (D2) or U.S. and California Government (D3)</td>
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<tr>
<td><strong>Total Units</strong></td>
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<tr>
<td><strong>Fourth Semester</strong></td>
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<tr>
<td>MATH 245 or MATH 376</td>
<td>Elementary Differential Equations and Linear Algebra or Ordinary Differential Equations I</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 240 &amp; PHYS 242</td>
<td>General Physics with Calculus III and General Physics with Calculus III Laboratory</td>
<td>4</td>
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<tr>
<td>GE Area A: Written English Communication II (A4) if not already satisfied</td>
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</tr>
<tr>
<td>or SF State Studies or University Elective</td>
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</tr>
<tr>
<td>GE Area D: Social Sciences (D1)</td>
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</tr>
<tr>
<td>GE Area D: U.S. History (D2) or U.S. and California Government (D3)</td>
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<td>3</td>
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<tr>
<td><strong>Total Units</strong></td>
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<tr>
<td><strong>Fifth Semester</strong></td>
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<tr>
<td>CSC 309</td>
<td>Computer Programming for Scientists and Engineers</td>
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<tr>
<td>PHYS 320</td>
<td>Modern Physics I</td>
<td>3</td>
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<tr>
<td>PHYS 321</td>
<td>Modern Physics Laboratory</td>
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<tr>
<td>Major Elective (10 Units Total)</td>
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<td>2-3</td>
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<tr>
<td>GE Area C: Arts (C1) or Humanities (C2)</td>
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<td>3</td>
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<tr>
<td><strong>Total Units</strong></td>
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<td>13-14</td>
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## Sixth Semester

<table>
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<th>Course</th>
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<tbody>
<tr>
<td>PHYS 330</td>
<td>Analytical Mechanics I</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 385</td>
<td>Introduction to Theoretical Physics I</td>
<td>3</td>
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<tr>
<td>Major Elective (10 Units Total)</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>GE Area UD-C: Upper Division Arts and/or Humanities (Consider SF State Studies Course)</td>
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<tr>
<td>GE Area UD-D: Upper Division Social Sciences (Consider SF State Studies Course)</td>
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<tr>
<td><strong>Units</strong></td>
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<td><strong>15</strong></td>
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## Seventh Semester

<table>
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<tr>
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<th>Units</th>
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<tbody>
<tr>
<td>PHYS 360</td>
<td>Electricity and Magnetism I</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 370</td>
<td>Thermodynamics and Statistical Mechanics</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 430</td>
<td>Quantum Mechanics I</td>
<td>3</td>
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<tr>
<td>PHYS 457</td>
<td>Introduction to Analog Electronics</td>
<td>4</td>
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<tr>
<td>PHYS 490</td>
<td>Physics Project Laboratory</td>
<td>2</td>
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<tr>
<td><strong>Units</strong></td>
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## Eighth Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Units</th>
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<tbody>
<tr>
<td>PHYS 460</td>
<td>Electricity and Magnetism II</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 491GW</td>
<td>Advanced Laboratory II - GWAR</td>
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<tr>
<td>PHYS 695</td>
<td>Culminating Experience in Physics</td>
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<tr>
<td>Major Elective (10 Units Total) – Take Two</td>
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<td>6</td>
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<tr>
<td>GE Area UD-B: Upper Division Physical and/or Life Sciences (Consider SF State Studies Course)</td>
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<td>3</td>
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<tr>
<td><strong>Units</strong></td>
<td></td>
<td><strong>14</strong></td>
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</tbody>
</table>

**Total Units 120-121**

1. To avoid taking additional units, it is recommended that you meet LLD and SF State Studies requirements (AERM, GP, ES, SJ) within your GE or major.
2. 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.
3. **Major Electives (10 units)**
   Upper division astronomy, physics, mathematics, or related sciences courses