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

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

<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>
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<tr>
<td>ENG 114</td>
<td>Writing the First Year: Finding Your Voice (A2)</td>
<td>3</td>
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<tr>
<td>MATH 197</td>
<td>Prelude to Calculus I (Prerequisite for MATH 226)</td>
<td>3</td>
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<tr>
<td>GE Area A</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>GE Area C</td>
<td></td>
<td>3</td>
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<tr>
<td>GE Area D</td>
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<tr>
<td><strong>Units</strong></td>
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| **Second Semester** | | |
| MATH 198 | Prelude to Calculus II (Prerequisite for MATH 226, B4) | 3 |
| GE Area A | | 3 |
| GE Area C | | 3 |
| GE Area D | | 3 |
| **Units** | | 15 |

| **Third Semester** | | |
| MATH 226 | Calculus I (Major Lower-Division Prerequisite, B4) | 4 |
| GE Area B: Life Science (B2) | | 3 |
| GE Area C | | 3 |
| GE Area D | | 3 |
| **Units** | | 13 |

| **Fourth Semester** | | |
| CSC 309 | Computer Programming for Scientists and Engineers (Major Lower-Division Prerequisite) | 3 |
| MATH 227 | Calculus II (Major Lower-Division Prerequisite) | 4 |

| **Fifth Semester** | | |
| MATH 228 | Calculus III (Major Lower-Division Prerequisite) | 4 |
| PHYS 230 & PHYS 232 | General Physics with Calculus II and General Physics with Calculus II Laboratory (Major Lower-Division Prerequisite) | 4 |
| GE Area UD-B: Upper-Division Physical and/or Life Sciences (Consider SF State Studies Course) | | 3 |
| SF State Studies or University Elective (if selecting MATH 245) or MATH 325 | Linear Algebra (if selecting MATH 376) | 3 |
| **Units** | | 14 |

| **Sixth Semester** | | |
| MATH 245 or MATH 376 | Elementary Differential Equations and Linear Algebra (Major Lower-Division Prerequisite) or Ordinary Differential Equations I | 3 |
| PHYS 240 & PHYS 242 | General Physics with Calculus III and General Physics with Calculus III Laboratory (Major Lower-Division Prerequisite) | 4 |
| GE Area UD-C: Upper-Division Arts and/or Humanities (Consider SF State Studies Course) | | 3 |
| GE Area UD-D: Upper-Division Social Sciences (Consider SF State Studies Course) | | 3 |
| **Units** | | 13 |

<p>| <strong>Seventh Semester</strong> | | |
| PHYS 320 &amp; PHYS 321 | Modern Physics I and Modern Physics Laboratory (Major Upper-Division Core) | 5 |
| PHYS 330 | Analytical Mechanics I (Major Upper-Division Core) | 3 |</p>
<table>
<thead>
<tr>
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<tbody>
<tr>
<td>PHYS 385</td>
<td>Introduction to Theoretical Physics I (Major Upper-Division Core)</td>
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<tr>
<td>Eighth Semester</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>PHYS 457</td>
<td>Introduction to Analog Electronics (Major Upper-Division Core)</td>
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<td>Ninth Semester</td>
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<tr>
<td>PHYS 430</td>
<td>Quantum Mechanics I (Major Upper-Division Core)</td>
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<tr>
<td>PHYS 460</td>
<td>Electricity and Magnetism II (Major Upper-Division Core)</td>
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<tr>
<td>PHYS 490</td>
<td>Physics Project Laboratory (Major Upper-Division Core)</td>
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<tr>
<td>Tenth Semester</td>
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<tr>
<td>PHYS 491GW</td>
<td>Advanced Laboratory II - GWAR (Major Upper-Division Core)</td>
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<tr>
<td>PHYS 695</td>
<td>Culminating Experience in Physics (Major Upper-Division Core)</td>
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<tr>
<td>Major Elective (10 units total) - Take Two</td>
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Total Units: 121

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. Information regarding the courses that correspond with your MATH Pathway/Category can be found on the Developmental Studies Office Website.

3 QR 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 Major Electives (10 units)
Upper-division astronomy, physics, mathematics, or related sciences courses.