BACHELOR OF SCIENCE IN PHYSICS: CONCENTRATION IN PHYSICS FOR TEACHING - QUANTITATIVE REASONING CATEGORY I/II AND ENG 114

120 Total Units Required
Minimum Number of Units in the Major: 64

This roadmap is a suggested plan of study and does not replace meeting with an advisor. Please note that students may need to adjust the actual sequence of courses based on course availability. Please consult an advisor in your major program for further guidance.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Units</th>
</tr>
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<tbody>
<tr>
<td>First Semester</td>
<td></td>
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<tr>
<td>ENG 114</td>
<td>Writing the First Year: Finding Your Voice (A2)</td>
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<tr>
<td>MATH 226</td>
<td>Calculus I (Major Prerequisite, B4)</td>
<td>4</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>
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<tr>
<td>GE Area D</td>
<td></td>
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<tr>
<td>Units</td>
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<tr>
<td>Second Semester</td>
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<tr>
<td>MATH 227</td>
<td>Calculus II (Major Prerequisite)</td>
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</tr>
<tr>
<td>PHYS 220</td>
<td>General Physics with Calculus I and General Physics with Calculus I Laboratory (Major Prerequisite, B1, B3)</td>
<td>4</td>
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<tr>
<td>GE Area A</td>
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<td>3</td>
</tr>
<tr>
<td>GE Area E</td>
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<td>Units</td>
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<tr>
<td>Third Semester</td>
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<tr>
<td>MATH 228</td>
<td>Calculus III (Major Prerequisite)</td>
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<tr>
<td>PHYS 230</td>
<td>General Physics with Calculus II and General Physics with Calculus II Laboratory (Major Prerequisite, B1, B3)</td>
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<tr>
<td>GE Area B: Life Science (B2)</td>
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<tr>
<td>SF State Studies or University Elective (if selecting MATH 245) or MATH 325</td>
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<tr>
<td>MATH 325</td>
<td>Linear Algebra (if selecting MATH 376)</td>
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Fourth Semester

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<tbody>
<tr>
<td>MATH 245 or MATH 376</td>
<td>Elementary Differential Equations and Linear Algebra (Major Prerequisite) or Ordinary Differential Equations I</td>
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<tr>
<td>PHYS 240 &amp; PHYS 242</td>
<td>General Physics with Calculus III and General Physics with Calculus III Laboratory (Major Prerequisite)</td>
<td>4</td>
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<tr>
<td>GE Area C - Take Two</td>
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<tr>
<td>GE Area D</td>
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Fifth Semester

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<tbody>
<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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<tr>
<td>PHYS 385</td>
<td>Introduction to Theoretical Physics I (Major Upper-Division Core)</td>
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<td>GE Area D</td>
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Sixth Semester

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<tbody>
<tr>
<td>PHYS 360</td>
<td>Electricity and Magnetism I (Major Upper-Division Core)</td>
<td>3</td>
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<tr>
<td>PHYS 370</td>
<td>Thermodynamics and Statistical Mechanics (Major Upper-Division Core)</td>
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<td>Major Elective (12 Units Total) - Take Two</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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<td>Units</td>
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Seventh Semester

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<tr>
<td>PHYS 490</td>
<td>Physics Project Laboratory (Major Upper-Division Core)</td>
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<tr>
<td>SCI 652</td>
<td>SF State Science Partners in K-12 Schools (Major Upper-Division Core)</td>
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<tr>
<td>Major Elective (12 Units Total) - Take One</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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Bachelor of Science in Physics: Concentration in Physics for Teaching - Quantitative Reasoning Category I/II and ENG 114

<table>
<thead>
<tr>
<th>GE Area UD-C: Upper-Division Arts and/or Humanities (Consider SF State Studies Course)</th>
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<table>
<thead>
<tr>
<th>Eighth Semester</th>
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<tbody>
<tr>
<td><strong>PHYS 491GW</strong></td>
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<tr>
<td><strong>PHYS 695</strong></td>
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<tr>
<td><strong>Major Elective (12 Units Total) - Take One</strong></td>
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<tr>
<td><strong>SF State Studies or University Elective – Take Four</strong></td>
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<tr>
<td><strong>Total Units</strong></td>
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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. To avoid taking additional units, it is recommended that you meet SF State Studies requirements (AERM, GP, ES, SJ) within your GE or major.

4. Selected in consultation with a departmental advisor to prepare to teach a second subject in addition to physics, or general science at the 9th grade level. Electives may be lower-division or upper-division courses.