BACHELOR OF SCIENCE IN PHYSICS: CONCENTRATION IN PHYSICS FOR TEACHING ROADMAP

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>
</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)</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 ^3</td>
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<td>3</td>
</tr>
<tr>
<td>GE Area C</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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<tr>
<td><strong>Second 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>
<td>General Physics with Calculus I and General Physics with Calculus I Laboratory (Major Prerequisite, B1, B3)</td>
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<tr>
<td>GE Area A</td>
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<tr>
<td>GE Area E</td>
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<td><strong>Third Semester</strong></td>
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<td>MATH 228</td>
<td>Calculus III (Major Prerequisite)</td>
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<tr>
<td>PHYS 230 &amp; PHYS 232</td>
<td>General Physics with Calculus II and General Physics with Calculus II Laboratory (Major Prerequisite)</td>
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<tr>
<td>GE Area A: Life Science (B2)</td>
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<tr>
<td>Select One:</td>
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<tr>
<td>SF State Studies or University Elective (if selecting MATH 245)</td>
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<tr>
<td>MATH 325</td>
<td>Linear Algebra (if selecting MATH 376)</td>
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<td><strong>Fourth Semester</strong></td>
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<td>Select One (Major Prerequisite):</td>
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<tr>
<td><strong>Units</strong></td>
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<tr>
<td><strong>Fifth 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>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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<td>PHYS 490</td>
<td>Physics Project Laboratory (Major Upper-Division Core)</td>
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<td>SCI 652</td>
<td>SF State Science Partners in K-12 Schools (Major Upper-Division Core)</td>
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<td>Major Elective (12 Units Total) - Take One ^4</td>
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<tr>
<td><strong>Units</strong></td>
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### Eighth Semester

<table>
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<tr>
<td>PHYS 491GW</td>
<td>Advanced Laboratory Techniques I - GWAR (Major Upper-Division Core)</td>
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<td>PHYS 695</td>
<td>Culminating Experience in Physics (Major Upper-Division Core)</td>
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<td>Major Elective (12 Units Total) - Take One</td>
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<td>U.S. and California Government</td>
<td>(<a href="http://bulletin.sfsu.edu/undergraduate-education/american-institutions/#usg">http://bulletin.sfsu.edu/undergraduate-education/american-institutions/#usg</a>)</td>
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</tr>
<tr>
<td>SF State Studies or University Elective – Take Two</td>
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<td>6</td>
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<tr>
<td><strong>Units</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. To determine the best B4 course option, students should complete the online advising activity at mathadvising.sfsu.edu (https://mathadvising.sfsu.edu/). Questions? Contact Gator Smart Start. (https://gatorsmartstart.sfsu.edu/)

3. To avoid taking additional units, it is recommended that you meet the **SF State Studies** (AERM, GP, ES, SJ) requirements 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. If **MATH 325** was taken, those units can be applied to this requirement.

± Given catalog rights, fall 2023 transfer students do not need to complete an Area F course.