

# BACHELOR OF SCIENCE IN PHYSICS ROADMAP

120 Total Units Required  
 Minimum Number of Units in the Major: 72

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.

Course	Title	Units
<b>First Semester</b>		
ENG 114	Writing the First Year: Finding Your Voice (A2) <sup>1</sup>	3
MATH 226	Calculus I (Major Lower-Division Prerequisite, B4) <sup>2</sup>	4
PHYS 200	Planning for Success as a Physics & Astronomy Major (Major Prerequisite)	1
GE Area A <sup>3</sup>		3
GE Area C		3
GE Area D		3
<b>Units</b>		<b>17</b>
<b>Second Semester</b>		
MATH 227	Calculus II (Major Lower-Division Prerequisite)	4
PHYS 220 & PHYS 222	General Physics with Calculus I and General Physics with Calculus I Laboratory (Major Lower-Division Prerequisite, B1, B3)	4
GE Area A		3
GE Area E		3
<b>Units</b>		<b>14</b>
<b>Third Semester</b>		
Select One (Upper-Division Core):		3
CSC 309	Computer Programming	
MATH 209	Mathematical Computing	
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 C		3
<b>Units</b>		<b>14</b>
<b>Fourth Semester</b>		
Select One (Major Lower-Division Prerequisite):		3
MATH 225	Introduction to Linear Algebra	
MATH 245	Elementary Differential Equations and Linear Algebra	
PHYS 240 & PHYS 242	General Physics with Calculus III and General Physics with Calculus III Laboratory (Major Lower-Division Prerequisite)	4
GE Area B: Life Science (B2)		3
GE Area C		3
GE Area D		3
<b>Units</b>		<b>16</b>
<b>Fifth Semester</b>		
Select One:		3
MATH 376	Ordinary Differential Equations I (if MATH 225 was taken)	
SF State Studies or University Elective (if MATH 245 was taken)		
PHYS 320 & PHYS 321	Modern Physics I and Modern Physics Laboratory (Major Upper-Division Core)	5
PHYS 330	Analytical Mechanics I (Major Upper-Division Core)	3
PHYS 385	Introduction to Theoretical Physics I (Major Upper-Division Core)	3
<b>Units</b>		<b>14</b>
<b>Sixth Semester</b>		
PHYS 360	Electricity and Magnetism I (Major Upper-Division Core)	3
PHYS 370	Thermodynamics and Statistical Mechanics (Major Upper-Division Core)	3

PHYS 457	Introduction to Analog Electronics (Major Upper-Division Core)	4
Major Elective (8-11 Units Total) - Take One <sup>4</sup>		3
GE Area F <sup>±</sup>		3
<b>Units</b>		<b>16</b>
<b>Seventh Semester</b>		
PHYS 430	Quantum Mechanics I (Major Upper-Division Core)	3
PHYS 460	Electricity and Magnetism II (Major Upper-Division Core)	3
PHYS 491GW	Advanced Laboratory Techniques I - GVAR (Culminating Experience)	3
GE Area UD-B: Upper-Division Physical and/or Life Sciences		3
GE Area UD-C: Upper-Division Arts and/or Humanities		3
<b>Units</b>		<b>15</b>
<b>Eighth Semester</b>		
Major Elective (8-11 Units Total) <sup>4</sup>		5
Select One:		3
Major Elective (8-11 Units Total) <sup>4</sup>		
SF State Studies or University Elective (if MATH 225/MATH 376 taken)		
GE Area UD-D: Upper-Division Social Sciences		3
U.S. and California Government ( <a href="http://bulletin.sfsu.edu/undergraduate-education/american-institutions/#usg">http://bulletin.sfsu.edu/undergraduate-education/american-institutions/#usg</a> )		3
<b>Units</b>		<b>14</b>
<b>Total Units</b>		<b>120</b>

<sup>1</sup> 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.

<sup>2</sup> To determine the best B4 course option, students should complete the online advising activity at [mathadvising.sfsu.edu](https://mathadvising.sfsu.edu) (<https://mathadvising.sfsu.edu/>). Questions? Contact Gator Smart Start. (<https://gatorsmartstart.sfsu.edu/>)

<sup>3</sup> 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.

<sup>4</sup> **Electives (8-11 units)**  
Choose enough upper-division PHYS and/or ASTR courses to reach 72 units for the major. A maximum of 5 units of 600-level PHYS and/or ASTR can be used as electives. A maximum of 3 units outside of ASTR or PHYS, with prior permission of a faculty advisor.

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