

# BACHELOR OF ARTS IN PHYSICS ROADMAP – QUANTITATIVE REASONING CATEGORY I/II AND ENG 114

120 Total Units Required

Minimum Number of Units in the Major: 52

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 Prerequisite, B4) <sup>2</sup>	4
GE Area A <sup>3</sup>		3
GE Area C		3
GE Area D		3
<b>Units</b>		<b>16</b>
<b>Second Semester</b>		
MATH 227	Calculus II (Major Prerequisite)	4
PHYS 220 & PHYS 222	General Physics with Calculus I and General Physics with Calculus I Laboratory (Major Prerequisites, B1, B3)	4
GE Area A		3
GE Area E		3
<b>Units</b>		<b>14</b>
<b>Third Semester</b>		
MATH 228	Calculus III (Major Prerequisite)	4
PHYS 230 & PHYS 232	General Physics with Calculus II and General Physics with Calculus II Laboratory (Major Prerequisites)	4
GE Area B: Life Science (B2)		3
SF State Studies or University Elective (if selecting MATH 245) or <sup>4</sup>		3
MATH 325	Linear Algebra (if selecting MATH 376)	
<b>Units</b>		<b>14</b>
<b>Fourth Semester</b>		
Select One (Major Prerequisite):		3

MATH 245	Elementary Differential Equations and Linear Algebra	
MATH 376	Ordinary Differential Equations I	
PHYS 240 & PHYS 242	General Physics with Calculus III and General Physics with Calculus III Laboratory (Major Prerequisites)	4
GE Area D		3
GE Area C - Take Two		6
<b>Units</b>		<b>16</b>
<b>Fifth Semester</b>		
PHYS 320	Modern Physics I (Major Upper-Division Core)	3
PHYS 321	Modern Physics Laboratory (Major Upper-Division Core)	2
PHYS 330	Analytical Mechanics I (Major Upper-Division Core)	3
PHYS 385	Introduction to Theoretical Physics I (Major Upper-Division Core)	3
GE Area F <sup>±</sup>		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
Major Elective (On advisement. PHYS 460 or PHYS 325 recommended.)		2
GE Area UD-C: Upper-Division Arts and/or Humanities (Consider SF State Studies Course)		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
SF State Studies or University Elective <sup>4</sup>		2
<b>Units</b>		<b>16</b>
<b>Seventh Semester</b>		
PHYS 490	Physics Project Laboratory (Major Upper-Division Core)	2
Major Elective (On advisement. PHYS 460 or PHYS 325 recommended.)		2
GE Area UD-B: Upper-Division Physical and/or Life Sciences (Consider SF State Studies Course)		3
GE Area UD-D: Upper-Division Social Sciences (Consider SF State Studies Course)		3

SF State Studies or University Elective - Take Two <sup>4</sup>		6
	<b>Units</b>	<b>16</b>
<b>Eighth Semester</b>		
PHYS 491GW	Advanced Laboratory II - GVAR (Major Upper-Division Core) <sup>3</sup>	1
PHYS 695	Culminating Experience in Physics (Major Upper-Division Core)	1
Major Elective (On advisement. PHYS 460 or PHYS 325 recommended.)		4
SF State Studies or University Elective - Take Three <sup>4</sup>		8
	<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/>). 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> **Complementary Studies**

Upon completion of the B.A. in Physics program, students will have taken 12 units of Calculus courses that satisfy the Complementary Studies requirement for a B.A. degree.

Students who have earned AA-T or AS-T degrees and are pursuing a similar B.A. degree at SF State are required to fulfill the Complementary Studies requirement as defined by the major department. Students should consult with a major advisor about how transfer units and/or SF State units can best be applied to this requirement in order to ensure degree completion within 60 units.

± Given catalog rights, fall 2022 transfer students do not need to complete an Area F course.