

BACHELOR OF SCIENCE IN PHYSICS ROADMAP – QUANTITATIVE REASONING CATEGORY 1/2

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 your Degree Planner (<https://registrar.sfsu.edu/degreeplanner>) and an advisor for further guidance.

To avoid taking additional units, it is recommended that you meet the **SF State Studies** (AERM, GP, ESCA, SJ) requirements within your GE or major.

Course	Title	Units
First Semester		
MATH 226	Calculus I (Major Lower-Division Prerequisite, GE 2) ¹	4
PHYS 200	Planning for Success as a Physics & Astronomy Major (Major Prerequisite)	1
GE Area 1: English Communication		3
GE Area 3: Arts and Humanities		3
GE Area 4: Social and Behavioral Sciences ²		3
		Units
		14
Second Semester		
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, GE 5A, GE 5C)	4
GE Area 1A: English Composition ³		3
GE Area 1: English Communication		3
		Units
		14
Third Semester		
Select One (Major Lower-Division Prerequisite):		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 3: Arts and Humanities		3
		Units
		14
Fourth Semester		
MATH 245	Elementary Differential Equations and Linear Algebra (Major Lower-Division Prerequisite)	3
PHYS 240 & PHYS 242	General Physics with Calculus III and General Physics with Calculus III Laboratory (Major Lower-Division Prerequisite)	4

GE Area 4: Social and Behavioral Sciences ²		3
GE Area 5B: Biological Science		3
SF State Studies or University Elective		3
	Units	16
Fifth Semester		
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
SF State Studies or University Elective		3
	Units	14
Sixth Semester		
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 (11 Units Total) ⁴		3
GE Area 6: Ethnic Studies (https://bulletin.sfsu.edu/undergraduate-education/general-education/areasix/)		3
	Units	16
Seventh Semester		
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 3UD: Upper-Division Arts or Humanities		3
GE Area 5UD or 2UD: Upper-Division Sciences or Upper-Division Mathematical Concepts		3
	Units	15
Eighth Semester		
Major Elective (11 Units Total) ⁴		8
GE Area 4UD: Upper-Division Social and Behavioral Sciences		3
US and California Government (https://bulletin.sfsu.edu/undergraduate-education/american-institutions/#usg)		3
SF State Studies or University Elective		3
	Units	17
	Total Units	120

¹ Students should use their Pathway/Category (<https://gatorsmartstart.sfsu.edu/pathways>) to determine the appropriate GE 2 course option. For directions on how to view your Pathway/Category, visit [how to find your pathway \(https://gatorsmartstart.sfsu.edu/howtofindyourpathways\)](https://gatorsmartstart.sfsu.edu/howtofindyourpathways). Questions? Contact Gator Smart Start. (<https://gatorsmartstart.sfsu.edu/>)

² First-time freshmen must take one lower-division Area 4 course that meets US History (USH).

³ Students should use their Pathway/Category (<https://gatorsmartstart.sfsu.edu/pathways>) to determine the appropriate GE 1A course option. For directions on how to view your Pathway/Category, visit [how to find your pathway \(https://gatorsmartstart.sfsu.edu/howtofindyourpathways\)](https://gatorsmartstart.sfsu.edu/howtofindyourpathways). Questions? Contact Gator Smart Start. (<https://gatorsmartstart.sfsu.edu/>)

⁴ **Electives (11 units)**

Maximum of 5 units of 600-level PHYS and/or ASTR can be used as electives. Maximum of 3 units outside of ASTR or PHYS, with prior permission of a faculty advisor.