

BACHELOR OF SCIENCE IN PHYSICS ROADMAP – QUANTITATIVE REASONING CATEGORY 3/4

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 197	Prelude to Calculus I (Prerequisite for MATH 226) ¹	3
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		13
Second Semester		
MATH 198	Prelude to Calculus II (Prerequisite for MATH 226, GE 2) ¹	3
GE Area 1A: English Composition ³		3
GE Area 1: English Communication		3
GE Area 4: Social and Behavioral Sciences ²		3
Units		12
Third Semester		
MATH 226	Calculus I (Major Lower-Division Prerequisite, GE 2) ¹	4
GE Area 3: Arts and Humanities		3
GE Area 5B: Biological Science		3
U.S. and California Government (https://bulletin.sfsu.edu/undergraduate-education/american-institutions/#usg)		3
Units		13
Fourth Semester		
Select One (Upper-Division Core):		3
CSC 309	Computer Programming	
MATH 209	Mathematical Computing	

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 6: Ethnic Studies (https://bulletin.sfsu.edu/undergraduate-education/general-education/areasix/)		3
Units		14

Fifth Semester

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 5UD or 2UD: Upper-Division Sciences or Upper-Division Mathematical Concepts		3
GE Area 3UD: Upper-Division Arts or Humanities		3
Units		14

Sixth Semester

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
Select One:		3
Major Elective (8-11 Units Total) ⁴		
SF State Studies or University Elective (if MATH 245/MATH 376 taken)		
GE Area 4UD: Upper-Division Social and Behavioral Sciences		3
Units		13

Seventh Semester

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
Units		14
Eighth 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 (8-11 Units Total) ⁴		4
Units		14
Ninth 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 (Major Upper-Division Core)	3
Major Elective (8-11 Units Total) ⁴		4
Units		13
Total Units		120

Choose enough upper-division PHYS and/or ASTR course to reach 72 units for the major. 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.

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/>). 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/>). Questions? Contact Gator Smart Start. (<https://gatorsmartstart.sfsu.edu/>)

⁴ [Electives \(8-11 units\)](#)