

BACHELOR OF SCIENCE IN PHYSICS: CONCENTRATION IN PHYSICS FOR TEACHING - QUANTITATIVE REASONING CATEGORY III/IV AND STRETCH ENGLISH

120 Total Units Required
Minimum Number of Units in the Major: 64

Course	Title	Units
First Semester		
ENG 104	Writing the First Year. Finding Your Voice Stretch I ¹	3
MATH 197	Prelude to Calculus I (Prerequisite for MATH 226) ^{2,3}	3
GE Area A ⁴		3
GE Area D		3
SF State Studies or University Elective		3
	Units	15
Second Semester		
ENG 105	Writing the First Year. Finding Your Voice Stretch II (A2) ¹	3
MATH 198	Prelude to Calculus II (Prerequisite for MATH 226, B4) ^{2,3}	3
GE Area A		3
GE Area C		3
SF State Studies or University Elective		2
	Units	14
Third Semester		
MATH 226	Calculus I (Major Prerequisite, B4) ^{2,3}	4
GE Area B: Life Science (B2)		3
GE Area C		3
GE Area D		3
GE Area E		3
	Units	16
Fourth Semester		
MATH 227	Calculus II (Major Prerequisite)	4
PHYS 220 & PHYS 222	General Physics with Calculus I and General Physics with Calculus I Laboratory (Major Prerequisite, B1, B3)	4
GE Area C		3

GE Area D		3
	Units	14
Fifth Semester		
MATH 228	Calculus III (Major Prerequisite)	4
PHYS 230 & PHYS 232	General Physics with Calculus II and General Physics with Calculus II Laboratory (Major Prerequisite)	4
Major Elective (12 Units Total) - Take One ⁵		3
SF State Studies or University Elective (if selecting MATH 245) or		3
MATH 325	Linear Algebra (if selecting MATH 376)	
	Units	14
Sixth Semester		
MATH 245 or MATH 376	Elementary Differential Equations and Linear Algebra (Major Prerequisite) or Ordinary Differential Equations I	3
PHYS 240 & PHYS 242	General Physics with Calculus III and General Physics with Calculus III Laboratory (Major Prerequisite)	4
GE Area UD-C: Upper-Division Arts and/or Humanities (Consider SF State Studies Course)		3
GE Area UD-D: Upper-Division Social Sciences (Consider SF State Studies Course)		3
GE Area UD-B: Upper-Division Physical and/or Life Sciences (Consider SF State Studies Course)		3
	Units	16
Seventh Semester		
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
Major Elective (12 Units Total) - Take Two ⁵		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
SCI 652	SF State Science Partners in K-12 Schools (Major Upper-Division Core)	4
Major Elective (12 Units Total) - Take One ⁵		3
Units		13

Ninth Semester

PHYS 490	Physics Project Laboratory (Major Upper-Division Core)	2
Units		2

Tenth Semester

PHYS 491GW	Advanced Laboratory II - GVAR (Major Upper-Division Core)	1
PHYS 695	Culminating Experience in Physics (Major Upper-Division Core)	1
Units		2
Total Units		120

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 Depending on courses completed through Early Start, students in Pathway/Category III or IV may be required to enroll in a support course to complement their Quantitative Reasoning/B4 requirement. There are multiple course options for this pathway. Before enrolling in a B4 course, students should verify their MATH Pathway/Category in their [Student Center](#). Information regarding the courses that correspond with your MATH Pathway/Category can be found on the [Developmental Studies Office Website](#).

³ QR Category III students with a grade of B or higher in high school pre-calculus in the past year may be able to enroll in [MATH 226](#). Please see a department advisor.

⁴ To avoid taking additional units, it is recommended that you meet **SF State Studies** requirements (AERM, GP, ES, SJ) within your GE or major.

⁵ 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.