BACHELOR OF SCIENCE IN COMPUTER SCIENCE ROADMAP QUANTITATIVE REASONING CATEGORY III/IV

120 Total Units Required
Minimum Number of Units in the Major: 74

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, ES, SJ) requirements within your GE or major.

Course	Title	Units
First Semester		
CSC 101	Introduction to Computing (Core Computer Science Requirement)	3
MATH 197	Prelude to Calculus I (Prerequisite for MATH 198 and MATH 226) [1]	3
GE Area 1: English Communication - Take Two		6
GE Area 4: Social and Behavioral Sciences [2]		3
	Units	**15**
Second Semester		
CSC 215	Intermediate Computer Programming (Core Computer Science Requirement)	4
MATH 198	Prelude to Calculus II (Prerequisite for MATH 226, GE 2) [1]	3
GE Area 1A: English Composition [3]		3
GE Area 3: Arts and Humanities		3
GE Area 5B: Biological Science		3
	Units	**16**
Third Semester		
CSC 220	Data Structures (Core Computer Science Requirement)	3
MATH 225	Introduction to Linear Algebra (Major Mathematics and Physics)	3
MATH 226	Calculus I (Major Mathematics and Physics, GE 2) [1]	4
GE Area 3: Arts and Humanities		3

Course	Title	Units
GE Area 4: Social and Behavioral Sciences [2]		3
	Units	**16**
Fourth Semester		
CSC 230	Discrete Mathematical Structures for Computer Science (Core Computer Science Requirement)	3
MATH 227	Calculus II (Major Mathematics and Physics)	4
PHYS 220	General Physics with Calculus I (Major Mathematics and Physics, GE 5A, GE 5C)	3
GE Area 6: Ethnic Studies (https://bulletin.sfsu.edu/undergraduate-education/general-education/areasix/)		3
U.S. and California Government (https://bulletin.sfsu.edu/undergraduate-education/american-institutions/#usg)		3
	Units	**16**
Fifth Semester		
CSC 256	Machine Structures (Core Computer Science Requirement)	3
CSC 300GW	Ethics, Communication, and Tools for Software Development - GWAR (Core Computer Science Requirement)	3
CSC 340	Programming Methodology (Core Computer Science Requirement)	3
MATH 324	Probability and Statistics with Computing (Major Mathematics and Physics)	3
PHYS 230 & PHYS 232	General Physics with Calculus II and General Physics with Calculus II Laboratory (Major Mathematics and Physics)	4
	Units	**16**
Sixth Semester		
CSC 317	Introduction to Web Software Development	3

CSC 415	Operating System Principles (Advanced Computer Science Requirement)	3
CSC 510	Analysis of Algorithms I	3
GE Area 5UD or 2UD: Upper-Division Sciences or Upper-Division Mathematical Concepts		3
GE Area 3UD: Upper-Division Arts or Humanities		3
	Units	**15**
Seventh Semester		
CSC 413	Software Development (Core Computer Science Requirement)	3
Major Elective (15 Units Total) - Take Two [4]		6
GE Area 4UD: Upper-Division Social and Behavioral Sciences		3
SF State Studies or University Elective		2
	Units	**14**
Eighth Semester		
CSC 648	Software Engineering (Advanced Computer Science Requirement) [5]	3
Major Elective (15 Units Total) - Take Three [4]		9
	Units	**12**
	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/). 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] **Major Electives (15 units)**
A full list of courses that can fulfill this requirement can be found in the Degree Requirements (https://bulletin.sfsu.edu/colleges/science-engineering/computer-science/bs-computer-science/#degreerequirementstext).

[5] CSC 648 serves as the major capstone course.