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 Tv	vo	6
GE Area 4: Social and Behavioral Sciences ²		3
Second Semester	Units	15
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

Fourth Semester CSC 230 Discrete Mathematical Structures for Computer Science (Core Computer Science Requirement) MATH 227 Calculus II (Major Mathematics and Physics) PHYS 220 General Physics with Calculus I (Major Mathematics and Physics, GE 5A, GE 5C) GE Area 6: Ethnic Studies (https://bulletin.sfsu.edu/ undergraduate-education/general-education/areasix/) U.S. and California Government (https://bulletin.sfsu.edu/ undergraduate-education/american-institutions/#usg) Uiss Tifth Semester CSC 256 Machine Structures (Core Computer Science Requirement) CSC 300GW Ethics, GE Area 6: Ethnic Studies (https://bulletin.sfsu.edu/ undergraduate-education/general-education/areasix/) U.S. and California Government (https://bulletin.sfsu.edu/ undergraduate-education/american-institutions/#usg) Tols for Sortware CSC 256 Machine Structures (Core Computer Science Requirement) CSC 300GW Ethics, GOWAR (Core Computer Science Requirement) CSC 340 Programming Aethodology (Core Computer Science Requirement) MATH 324 Probability and Methodology (Core Computer Science Requirement) MATH 324 Probability and 3 Statistics with Computing (Major Mathematics and Physics) PHYS 230 General Physics with A Calculus II and General Physics with Calculus II Laboratory (Major Mathematics and Physics) Units 16 Sixth Semester CSC 317 Introduction to Web Software Development	GE Area 4: Social and Behavioral Sciences ²		3	
CSC 230 Discrete Mathematical Structures for Computer Science (Core Computer Science Requirement) MATH 227 Calculus II (Major Mathematics and Physics) PHYS 220 General Physics with Calculus I (Major Mathematics and Physics, GE 5A, GE 5C) GE Area 6: Ethnic Studies (https://bulletin.sfsu.edu/ undergraduate-education/general-education/areasix/) U.S. and California Government (https://bulletin.sfsu.edu/ undergraduate-education/american-institutions/#usg) Units 16 Fifth Semester CSC 256 Machine Structures (Core Computer Science Requirement) CSC 300GW Ethics, Communication, and Tools for Software Development - GWAR (Core Computer Science Requirement) CSC 340 Programming Methodology (Core Computer Science Requirement) MATH 324 Probability and Statistics with Computing (Major Mathematics and Physics) PHYS 230 General Physics with Alculuulus II Laboratory (Major Mathematics and Physics) PHYS 230 Laboratory (Major Mathematics and Physics) Units 16 Sixth Semester CSC 317 Introduction to Web Software				
Mathematical Structures for Computer Science (Core Computer Science (Core Computer Science Requirement) MATH 227 Calculus II (Major Mathematics and Physics) PHYS 220 General Physics with Calculus I (Major Mathematics and Physics, GE 5A, GE 5C) GE Area 6: Ethnic Studies (https://bulletin.sfsu.edu/ Mathematics and Physics, GE 5A, GE 5C) GE Area 6: Ethnic Studies (https://bulletin.sfsu.edu/ Mathematics and Physics, GE 5A, GE 5C) GE Area 6: Ethnic Studies (https://bulletin.sfsu.edu/ Mathematics and Physics, GE 5A, GE 5C) GE Area 6: Ethnic Studies (https://bulletin.sfsu.edu/ Mathematics and Physics) Units 16 Fifth Semester CSC 256 Machine Structures (Core Computer Science Requirement) CSC 300GW Ethics, 3 Communication, and Tools for Software Development - GWAR (Core Computer Science Requirement) CSC 340 Programming Methodology (Core Computer Science Requirement) MATH 324 Probability and Statistics with Computing (Major Mathematics and Physics) PHYS 230 General Physics with Computing (Major Mathematics and Physics) PHYS 230 General Physics with Calculus II Laboratory (Major Mathematics and Physics) PHYS 230 General Physics with Calculus II Laboratory (Major Mathematics and Physics) PHYS 230 Units 16 Sixth Semester CSC 317 Introduction to Web Software	Fourth Semester			
Mathematics and Physics) PHYS 220 General Physics with 3 Calculus I (Major Mathematics and Physics, GE 5A, GE 5C) GE Area 6: Ethnic Studies (https://bulletin.sfsu.edu/ 3 undergraduate-education/general-education/areasix/) U.S. and California Government (https://bulletin.sfsu.edu/ 3 undergraduate-education/american-institutions/#usg) Units 16 Fifth Semester CSC 256 Machine 3 Structures (Core Computer Science Requirement) CSC 300GW Ethics, 3 Communication, and Tools for Software Development - GWAR (Core Computer Science Requirement) CSC 340 Programming 3 Methodology (Core Computer Science Requirement) MATH 324 Probability and Statistics with Computing (Major Mathematics and Physics) PHYS 230 Reneral Physics with 4 Calculus II and General Physics with Calculus II Laboratory (Major Mathematics and Physics) PHYS 230 Very Calculus II Laboratory (Major Mathematics and Physics) Units 16 Sixth Semester CSC 317 Introduction to Web Software	CSC 230	Mathematical Structures for Computer Science (Core Computer Science	3	
Calculus I (Major Mathematics and Physics, GE 5A, GE 5C) GE Area 6: Ethnic Studies (https://bulletin.sfsu.edu/ 3 undergraduate-education/general-education/areasix/) U.S. and California Government (https://bulletin.sfsu.edu/ 3 undergraduate-education/american-institutions/#usg) Units 16 Fifth Semester CSC 256 Machine 3 Structures (Core Computer Science Requirement) CSC 300GW Ethics, 3 Communication, and Tools for Software Development - GWAR (Core Computer Science Requirement) CSC 340 Programming 3 Methodology (Core Computer Science Requirement) MATH 324 Probability and 3 Statistics with Computing (Major Mathematics and Physics) PHYS 230 General Physics with Calculus II and General Physics with Calculus II Laboratory (Major Mathematics and Physics) PHYS 230 Units 16 Sixth Semester CSC 317 Introduction to 3 Web Software	MATH 227	Mathematics and	4	
undergraduate-education/general-education/areasix/) U.S. and California Government (https://bulletin.sfsu.edu/ undergraduate-education/american-institutions/#usg) Units 16 Fifth Semester CSC 256	PHYS 220	Calculus I (Major Mathematics and Physics, GE 5A, GE	3	
undergraduate-education/american-institutions/#usg) Units				
Fifth Semester CSC 256 Machine Structures (Core Computer Science Requirement) CSC 300GW Ethics, 3 Communication, and Tools for Software Development - GWAR (Core Computer Science Requirement) CSC 340 Programming Methodology (Core Computer Science Requirement) MATH 324 Probability and Statistics with Computing (Major Mathematics and Physics) PHYS 230 General Physics with Calculus II and General Physics with Calculus II Laboratory (Major Mathematics and Physics) Units 16 Sixth Semester CSC 317 Introduction to Web Software			3	
Structures (Core Computer Science Requirement) CSC 300GW Ethics, 3 Communication, and Tools for Software Development - GWAR (Core Computer Science Requirement) CSC 340 Programming 3 Methodology (Core Computer Science Requirement) MATH 324 Probability and 3 Statistics with Computing (Major Mathematics and Physics) PHYS 230 General Physics with Computing (Major Mathematics and Physics) PHYS 232 Calculus II and General Physics with Calculus II Laboratory (Major Mathematics and Physics) Units 16 Sixth Semester CSC 317 Introduction to 3 Web Software	Fifth Semester	Units	16	
Communication, and Tools for Software Development - GWAR (Core Computer Science Requirement) CSC 340 Programming Methodology (Core Computer Science Requirement) MATH 324 Probability and Statistics with Computing (Major Mathematics and Physics) PHYS 230 General Physics with Calculus II and General Physics with Calculus II Laboratory (Major Mathematics and Physics) Units 16 Sixth Semester CSC 317 Introduction to Web Software	CSC 256	Structures (Core Computer Science	3	
CSC 340 Programming Methodology (Core Computer Science Requirement) MATH 324 Probability and Statistics with Computing (Major Mathematics and Physics) PHYS 230 General Physics with Calculus II and General Physics with Calculus II Laboratory (Major Mathematics and Physics) Units 16 Sixth Semester CSC 317 Introduction to Web Software	CSC 300GW	Communication, and Tools for Software Development - GWAR (Core Computer Science	3	
MATH 324 Probability and Statistics with Computing (Major Mathematics and Physics) PHYS 230 Reneral Physics with 4 Reneral Physics with Calculus II and General Physics with Calculus II Laboratory (Major Mathematics and Physics) Units 16 Sixth Semester CSC 317 Introduction to 3 Web Software	CSC 340	Programming Methodology (Core Computer Science	3	
& PHYS 232 Calculus II and General Physics with Calculus II Laboratory (Major Mathematics and Physics) Units 16 Sixth Semester CSC 317 Introduction to 3 Web Software	MATH 324	Probability and Statistics with Computing (Major Mathematics and	3	
Sixth Semester CSC 317 Introduction to 3 Web Software		Calculus II and General Physics with Calculus II Laboratory (Major Mathematics and	4	
Web Software	Sixth Semester	Units	16	
	CSC 317	Web Software	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 Science Mathematical Concepts	es or Upper-Division	3
GE Area 3UD: Upper-Division Arts or Human	ities	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 Beh	navioral 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

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/)

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.