

BACHELOR OF ARTS IN MATHEMATICS: CONCENTRATION IN MATHEMATICS FOR ADVANCED STUDY - QUANTITATIVE REASONING CATEGORY III/IV AND STRETCH ENGLISH

120 Total Units Required
Minimum Number of Units in the Major: 48

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 an advisor in your major program for further guidance.

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 C		3
GE Area D		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 D		3
Complementary Studies or SF State Studies or University Elective ⁵		3
Units		15
Third Semester		
MATH 226	Calculus I (Major Core, B4) ^{2,3}	4
GE Area B: Physical Science (B1) and Laboratory Science (B3) ⁵		3-4
GE Area E		3
GE Area C		3
Units		13-14

Fourth Semester		
MATH 227	Calculus II (Major Core)	4
GE Area B: Life Science (B2) and Laboratory Science (B3) ⁵		3-4
GE Area C		3
GE Area D		3
Complementary Studies or SF State Studies or University Elective ⁵		3
Units		16-17

Fifth Semester		
Select One (Major Concentration):		3
CSC 210	Introduction to Computer Programming	
CSC 309	Computer Programming	
MATH 228	Calculus III (Major Core)	4
MATH 301GW	Exploration and Proof - GVAR (Major Core)	3
GE Area UD-B: Upper-Division Physical and/or Life Sciences (Consider SF State Studies Course)		3
Complementary Studies or SF State Studies or University Elective ⁵		3
Units		16

Sixth Semester		
MATH 325	Linear Algebra (Major Core)	3
MATH 370	Real Analysis I (Major Core)	3
MATH 440	Probability and Statistics I (Major Concentration)	3
Major Elective (6 Units Total) - Take One ⁷		3
GE Area UD-C: Upper-Division Arts and/or Humanities (Consider SF State Studies Course)		3
Units		15

Seventh Semester		
Select One (Major Concentration):		3
MATH 310	Elementary Number Theory	
MATH 376	Ordinary Differential Equations I	
MATH 335	Modern Algebra (Major Core)	3
MATH 380	Introduction to Complex Analysis (Major Concentration)	3
Major Elective (6 Units Total) - Take One ⁷		3
GE Area UD-D: Upper-Division Social Sciences (Consider SF State Studies Course)		3
Units		15

Eighth Semester

MATH 435	Modern Algebra II (Major Concentration)	3
Select One (Major Concentration):		3
MATH 470	Real Analysis II: Several Variables	
MATH 471	Fourier Analysis and Applications	
Complementary Studies or SF State Studies or University Elective - Take Three ⁵		9
	Units	15
	Total Units	120-122

¹ ENG 114 can only be taken if you complete Directed Self-Placement (DSP) and select ENG 114; if you select 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 (<http://cms.sfsu.edu/content/student-center/>). Information regarding the courses that correspond with your MATH Pathway/Category can be found on the Developmental Studies Office Website (<http://developmentalstudies.sfsu.edu/>).

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 **Complementary Studies**

Students who pursue a Bachelor of Arts in Mathematics with Concentrations in Liberal Arts, Teaching, or Advanced Studies must complete 12 units of Complementary Studies, within a coherent group of courses with a prefix other than MATH, and not cross-listed with MATH. Complementary Studies units for the Mathematics major may come from:

1. Any courses offered by other departments in the College of Science & Engineering (CoSE), or
2. Any of the following courses outside of CoSE:
 - a. DS 312 Data Analysis with Computer Applications (3 units)
 - b. DS 408 Computer Simulation (3 units)
 - c. ECON 101 Introduction to Microeconomic Analysis (3 units) (D1)
 - d. ECON 301 Intermediate Microeconomic Theory (3 units)
 - e. ECON 302 Intermediate Macroeconomic Theory (3 units)
 - f. FIN 350 Business Finance (3 units)
 - g. ISYS 363 Information Systems for Management (3 units)
 - h. ISYS 463 Information Systems Analysis and Design (3 units)
 - i. ISYS 464 Managing Enterprise Data (3 units)
 - j. ISYS 650 Business Intelligence (3 units)
 - k. PHIL 205 Formal Logic I (3 units)
 - l. PHIL 350 Philosophy of Science (3 units) (UD-B)
 - m. PHIL 351 Philosophy of Risk (3 units) (UD-B, ES)
 - n. PHIL 694 Philosophical Logic Workshop (3 units)
 - o. PHIL 695 Advanced Logic Workshop (3 units)

Students who have earned AA-T or AS-T degrees and are pursuing a similar B.A. degree at SF State are required to fulfill the Complementary Studies requirement as defined by the major department. Students should consult with a major advisor about how transfer units and/or SF State units can best be applied to this requirement in order to ensure degree completion within 60 units.

⁶ Consider taking a class combined with a laboratory or a separate lab to fulfill B3 if not already satisfied.

⁷ **Major Electives**

Two elective MATH courses numbered 400 or above except MATH 475, MATH 565, MATH 575, MATH 576, MATH 577, and MATH 578.