

BACHELOR OF ARTS IN MATHEMATICS: CONCENTRATION IN MATHEMATICS FOR ADVANCED STUDY - QUANTITATIVE REASONING CATEGORY I/II AND ENG 114

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 114 | Writing the First Year. Finding Your Voice (A2) ¹ | 3 |
| MATH 226 | Calculus I (Major Core, B4) ² | 4 |
| GE Area A ³ | | 3 |
| GE Area C | | 3 |
| GE Area D | | 3 |
| | | Units 16 |
| Second Semester | | |
| MATH 227 | Calculus II (Major Core) | 4 |
| GE Area A | | 3 |
| GE Area D - Take Two | | 6 |
| GE Area E | | 3 |
| | | Units 16 |
| Third Semester | | |
| Select One (Major Concentration): | | 3 |
| CSC 210 | Introduction to Computer Programming | |
| CSC 309 | Computer Programming | |
| MATH 228 | Calculus III (Major Core) | 4 |
| GE Area B: Physical Science (B1) and Laboratory Science (B3) ⁴ | | 3-4 |
| GE Area C | | 3 |
| | | Units 13-14 |
| Fourth Semester | | |
| MATH 301GW | Exploration and Proof - GVAR (Major Core) | 3 |

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|---|--|-------------|
| MATH 440 | Probability and Statistics I (Major Concentration) | 3 |
| GE Area B: Life Science (B2) and Laboratory Science (B3) ⁴ | | 3-4 |
| GE Area C | | 3 |
| Complementary Studies or SF State Studies or University Elective ⁵ | | 3 |
| | | Units 15-16 |
| Fifth Semester | | |
| MATH 325 | Linear Algebra (Major Core) | 3 |
| MATH 380 | Introduction to Complex Analysis (Major Concentration) | 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 - Take Two ⁵ | | 6 |
| | | Units 15 |
| Sixth Semester | | |
| Select One (Major Concentration): | | 3 |
| MATH 310 | Elementary Number Theory | |
| MATH 376 | Ordinary Differential Equations I | |
| MATH 335 | Modern Algebra (Major Concentration) | 3 |
| Major Elective (6 Units Total) - Take One ⁶ | | 3 |
| GE Area UD-C: Upper-Division Arts and/or Humanities (Consider SF State Studies Course) | | 3 |
| Complementary Studies or SF State Studies or University Elective ⁵ | | 3 |
| | | Units 15 |
| Seventh Semester | | |
| MATH 370 | Real Analysis I (Major Core) | 3 |
| MATH 435 | Modern Algebra II (Major Concentration) | 3 |
| Major Elective (6 Units Total) - Take One ⁶ | | 3 |
| GE Area UD-D: Upper-Division Social Sciences (Consider SF State Studies Course) | | 3 |
| Complementary Studies or SF State Studies or University Elective ⁵ | | 3 |
| | | Units 15 |
| Eighth Semester | | |
| Select One (Major Concentration): | | 3 |
| MATH 470 | Real Analysis II: Several Variables | |
| MATH 471 | Fourier Analysis and Applications | |

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| Complementary Studies or SF State Studies or University Elective - Take Four ⁵ | 12 |
| | 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 To avoid taking additional units, it is recommended that you meet **SF State Studies** requirements (AERM, GP, ES, SJ) within your GE or major.

⁴ Consider taking a class combined with a laboratory or a separate lab to fulfill B3 if not already satisfied.

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 **Major Electives**

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