

# BACHELOR OF SCIENCE IN APPLIED MATHEMATICS - QUANTITATIVE REASONING CATEGORY I/II AND STRETCH ENGLISH

120 Total Units Required

Minimum Number of Units in the Major: 54

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
<b>First Semester</b>		
ENG 104	Writing the First Year: Finding Your Voice Stretch I <sup>1</sup>	3
MATH 226	Calculus I (Major Core, B4) <sup>2</sup>	4
GE Area A <sup>3</sup>		3
GE Area C		3
GE Area D		3
Units		16
<b>Second Semester</b>		
Select One (Major Core):		3
CSC 210	Introduction to Computer Programming (Prerequisite for MATH 400)	
CSC 309	Computer Programming	
ENG 105	Writing the First Year: Finding Your Voice Stretch II (A2) <sup>1</sup>	3
MATH 227	Calculus II (Major Core)	4
GE Area A		3
GE Area D		3
Units		16
<b>Third Semester</b>		
MATH 228	Calculus III (Major Core)	4
MATH 301GW	Exploration and Proof - GWAR (Major Core)	3
GE Area B: Physical Science (B1) and Laboratory Science (B3) <sup>4</sup>		3-4
GE Area E		3
Units		13-14

## Fourth Semester

MATH 325	Linear Algebra (Major Core)	3
MATH 440	Probability and Statistics I (Major Core)	3
GE Area B: Life Science (B2) and Laboratory Science (B3) <sup>4</sup>		3
GE Area C		3
GE Area D		3
Units		15

## Fifth Semester

MATH 376	Ordinary Differential Equations I (Major Core)	3
MATH 400	Numerical Analysis (Major Core)	3
Major Application Elective (9 Units Total) - Take One <sup>5</sup>		3
GE Area C		3
GE Area UD-B: Upper-Division Physical and/or Life Sciences (Consider SF State Studies Course)		3
Units		15

## Sixth Semester

Select One (Major Core):		3
MATH 335	Modern Algebra	
MATH 370	Real Analysis I	
MATH 380	Introduction to Complex Analysis	
MATH 460	Mathematical Modeling (Major Core)	3
Major Elective (6 Units Total) - Take One <sup>6</sup>		3
GE Area UD-D: Upper-Division Social Sciences (Consider SF State Studies Course)		3
SF State Studies or University Elective		3
Units		15

## Seventh Semester

MATH 696	Applied Mathematics Project I (Major Core) <sup>7</sup>	1
Major Application Elective (9 Units Total) - Take One <sup>5</sup>		3
Major Elective (6 Units Total) - Take One <sup>6</sup>		3
GE Area UD-C: Upper-Division Arts and/or Humanities (Consider SF State Studies Course)		3
SF State Studies or University Elective - Take Two		6
Units		16

## Eighth Semester

MATH 697	Applied Mathematics Project II (Major Core) <sup>7</sup>	2
Major Application Elective (9 Units Total) - Take One <sup>5</sup>		3
SF State Studies or University Elective - Take One		9
Units		14
Total Units		120-121

- <sup>1</sup> 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.
- <sup>2</sup> 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/>).
- <sup>3</sup> To avoid taking additional units, it is recommended that you meet **SF State Studies** requirements (AERM, GP, ES, SJ) within your GE.
- <sup>4</sup> Consider taking a class combined with a laboratory or a separate lab to fulfill B3 if not already satisfied.
- <sup>5</sup> **Major Application Electives (9 units)**  
A coherent collection of three courses emphasizing applications of mathematics, chosen with the consent of the applied mathematics advisor.
- <sup>6</sup> **Major Electives (6 units)**  
MATH 430 Mathematics of Optimization (3 units)  
MATH 442 Probability Models (3 units)  
MATH 447 Design and Analysis of Experiments (3 units)  
MATH 448 Introduction to Statistical Learning and Data Mining (3 units)  
MATH 449 Categorical Data Analysis (3 units)  
MATH 471 Fourier Analysis and Applications (3 units)  
MATH 477 Partial Differential Equations (3 units)  
MATH 491 Game Theory (3 units)  
MATH 494 Non-Parametric Statistics (3 units)  
MATH 495 Introduction to Wavelets and Frames with Applications (3 units)
- <sup>7</sup> MATH 696/MATH 697 serve as the capstone experience for the major.