

# BACHELOR OF SCIENCE IN APPLIED MATHEMATICS ROADMAP

120 Total Units Required

Minimum Number of Units in the Major: 55

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 114	Writing the First Year: Finding Your Voice (A2) <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
<b>Units</b>		<b>16</b>
<b>Second Semester</b>		
Select One (Major Core):		3
MATH 309	Mathematical Computing	
CSC 210	Introduction to Computer Programming (Prerequisite for MATH 400)	
CSC 215	Intermediate Computer Programming	
CSC 309	Computer Programming	
MATH 227	Calculus II (Major Core)	4
GE Area A		3
GE Area D		3
GE Area E		3
<b>Units</b>		<b>16</b>
<b>Third Semester</b>		
MATH 228	Calculus III (Major Core)	4
MATH 301GW	Exploration and Proof - GVAR (Major Core)	3
GE Area B: Physical Science (B1) and Laboratory Science (B3) <sup>4</sup>		3-4
GE Area C		3
<b>Units</b>		<b>13-14</b>

<b>Fourth Semester</b>		
MATH 325	Linear Algebra (Major Core)	4
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
SF State Studies or University Elective		3
<b>Units</b>		<b>16</b>
<b>Fifth Semester</b>		
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 F <sup>±</sup>		3
GE Area UD-B: Upper-Division Physical and/or Life Sciences		3
<b>Units</b>		<b>15</b>
<b>Sixth Semester</b>		
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		3
U.S. and California Government ( <a href="http://bulletin.sfsu.edu/undergraduate-education/american-institutions/#usg">http://bulletin.sfsu.edu/undergraduate-education/american-institutions/#usg</a> )		3
<b>Units</b>		<b>15</b>
<b>Seventh Semester</b>		
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		3
SF State Studies or University Elective - Take Two		5
<b>Units</b>		<b>15</b>
<b>Eighth Semester</b>		
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 Three		9
<b>Units</b>		<b>14</b>
<b>Total Units</b>		<b>120-121</b>

<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> To determine the best B4 course option, students should complete the online advising activity at [mathadvising.sfsu.edu](https://mathadvising.sfsu.edu) (<https://mathadvising.sfsu.edu/>). Questions? Contact Gator Smart Start. (<https://gatorsmartstart.sfsu.edu/>)

<sup>3</sup> 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.

<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.

± Given catalog rights, fall 2023 transfer students do not need to complete an Area F course.