APPLIED MATHEMATICS BS + MATHEMATICS MA SF STATE SCHOLARS ROADMAP

The San Francisco State Scholars program provides undergraduate students with an accelerated pathway to a graduate degree. Students in this program pursue a bachelor's and master's degree simultaneously. This program allows students to earn graduate credit while in their junior and/or senior year, reducing the number of semesters required for completion of a master's degree.

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 Year		
Fall 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**
Spring Semester		
Select One (Major Core):		3
MATH 209	Mathematical Computing	
CSC 101	Introduction to Computing	
CSC 309	Computer Programming	
MATH 227	Calculus II (Major Core)	4
GE Area A		3
GE Area D		3
GE Area E		3
	Units	**16**
Second Year		
Fall Semester		
MATH 228	Calculus III (Major Core)	4
MATH 301GW	Exploration and Proof - GWAR (Major Core)	3
Select One:		3
CSC 215	Intermediate Computer Programming (if CSC 101 taken)	
SF State Studies or University Elective (if MATH 209 or CSC 309 taken)		
GE Area B: Physical Science (B1) and Laboratory Science (B3) [4]		3-4
	Units	**13-14**
Spring Semester		
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) [4]		3-4
GE Area C - Take Two		6
	Units	**16-17**
Third Year		
Fall Semester		
MATH 376	Ordinary Differential Equations I (Major Core)	3
MATH 400	Numerical Analysis (Major Core)	3
MATH 735	Modern Algebra II (Graduate Core)	3
MATH 770	Real Analysis II: Several Variables (Graduate Core)	3
Application Elective (9 units) - Take One [5]		3
	Units	**15**
Spring Semester		
Select One (Major Core): [6]		3
MATH 335	Modern Algebra	
MATH 370	Real Analysis I	
MATH 380	Introduction to Complex Analysis	
MATH 460	Mathematical Modeling (Major Core) [6]	3
Major Elective (6 units) - Take One [6,7]		3
GE Area F		3
GE Area UD-B: Upper-Division Physical and/or Life Sciences		3
	Units	**15**
Fourth Year		
Fall Semester		
MATH 696	Applied Mathematics Project I (Major Core)	1
Application Elective (9 units) - Take One [5,6]		3
Major Elective (6 units) - Take One [6,7]		3
GE Area UD-C: Upper-Division Arts and/or Humanities		3
GE Area UD-D: Upper-Division Social Sciences		3
U.S. and California Government (http://bulletin.sfsu.edu/undergraduate-education/american-institutions/#usg)		3
	Units	**16**
Spring Semester		
MATH 697	Applied Mathematics Project II (Major Core)	2

Application Elective (9 units) - Take One [5,6]		3
SF State Studies or University Elective - Take Three		9
	Units	**14**
Fifth Year		
Fall Semester		
Graduate Elective - Take One [8]		3
SF State Studies or University Elective - Take Two		6
	Units	**9**
Spring Semester		
Graduate Electives - Take Two or Three [8]		6-9
Select One (Culminating Experience):		0-3
MATH 896EXM	Culminating Experience Examination	
MATH 898	Master's Thesis	
	Units	**6-12**
	Total Units	**136-144**

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

3 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.

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

5 **Major Application Electives (9 units)**
A coherent collection of three courses emphasizing applications of mathematics, chosen with the consent of the applied mathematics advisor.

6 Graduate core courses[9], except MATH 735 and MATH 770, may double count for this requirement for a max of 12 units.

7 **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 495 Introduction to Wavelets and Frames with Applications (3 units)

8 **Upper-Division/Graduate Mathematics or Related Courses (9-12 units)**
MATH 730 must be included among these units unless the student had earned a B or higher grade in an undergraduate complex analysis course. No more than 9 units may be selected from approved unpaired undergraduate upper-division courses. Students must complete either a thesis with oral defense (MATH 898) or take the comprehensive examinations and write an expository paper (MATH 896EXM). Students who plan to take MATH 898 must complete 9 units of elective courses. Students who plan to take MATH 896EXM must complete 12 units of elective courses, including at least 3 units of unpaired graduate courses.

9 **Graduate Core**
Select Three:
MATH 710 Measure and Integration (3 units)
MATH 711 Functional Analysis (3 units)
or MATH 730 Theory of Functions of a Complex Variable (3 units)
MATH 725 Advanced Linear Algebra (3 units)
MATH 850 Algebra (3 units)
Select an additional 3 units from unpaired graduate courses other than MATH 898 or MATH 899.