MAJOR IN MATHEMATICS, GENERAL MATHEMATICS CONCENTRATION

The General Mathematics concentration is a liberal arts program providing both a strong mathematics core and many free electives. This concentration is well suited for students who want to combine mathematics with other areas, such as business, law, computer science (http://www.cs.colostate.edu/), or statistics (http://statistics.colostate.edu/).

The General Mathematics concentration also prepares students for graduate work in mathematics (https://mathematics.colostate.edu/graduate-students/) or related fields. Mathematics is a great option for pre-law and pre-med students.

The career options for General Mathematics majors are vast and varied. A few examples include working with the National Security Agency, the military, in education, computing, or engineering firms.

Additional resources on careers for Mathematics majors can be found at:

- Mathematical Association of America (http://mathcareers.maa.org/)
- American Mathematical Society (http://www.ams.org/profession/)
- Society for Industrial and Applied Mathematics (https://www.siam.org/)

Requirements
Effective Fall 2022

A minimum grade of C (2.000) is required in all mathematics, statistics, and computer science courses that are required for graduation.

Freshman			
		AUCC	**Credits**
CO 150	College Composition (GT-CO2)	1A	3
MATH 160	Calculus for Physical Scientists I (GT-MA1)	1B	4
MATH 161	Calculus for Physical Scientists II (GT-MA1)	1B	4
MATH 192	First Year Seminar in Mathematical Sciences		1
1C (https://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#aucc)		1C	3
Arts and Humanities (https://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#arts-humanities)		3B	6
Historical Perspectives (https://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#historical-perspectives)		3D	3
Social and Behavioral Sciences (https://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#social-behavioral-sciences)		3C	3
Elective			3
	Total Credits		**30**
Sophomore			
MATH 261	Calculus for Physical Scientists III		4
PH 141	Physics for Scientists and Engineers I (GT-SC1)	3A	5
Select one course from the following:			2-4
CS 220	Discrete Structures and the Applications		
MATH 235	Introduction to Mathematical Reasoning		
Select one course from the following:			3-4
DSCI 369	Linear Algebra for Data Science		
MATH 369	Linear Algebra I		
Select four credits from the following:			4
CS 150A	Culture and Coding: Java (GT-AH3)	3B	
CS 150B	Culture and Coding: Python (GT-AH3)	3B	
CS 152	Python for STEM		
CS 158/MATH 158	Mathematical Algorithms in C		
CS 163	CS1—No Prior Programming Experience		
CS 164	CS1–Computational Thinking with Java		
MATH 151	Mathematical Algorithms in Matlab I		
MATH 152	Mathematical Algorithms in Maple		
STAT 158	Introduction to R Programming		
Select one course from the following:			3

STAT 303/ECE 303	Introduction to Communications Principles		
STAT 315	Intro to Theory and Practice of Statistics		
Advanced Writing (https://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#advanced-writing)		2	3
Biological and Physical Sciences (https://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#biological-physical-sciences)[1]		3A	5
	Total Credits		**29-32**

Junior

MATH 317	Advanced Calculus of One Variable	4B	3
Select two courses from the following:			6-7
MATH 340 or 345	Intro to Ordinary Differential Equations Differential Equations		
MATH 360	Mathematics of Information Security	4A	
MATH 366	Introduction to Abstract Algebra	4A	
Biological and Physical Sciences (https://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#biological-physical-sciences)[1]		3A	3
Mathematical Sciences Electives[2]			6
Electives			12
	Total Credits		**30-31**

Senior

Select one course from the following:[2]			3
MATH 417	Advanced Calculus I	4B,4C	
MATH 435	Projects in Applied Mathematics	4C	
MATH 466	Abstract Algebra I	4A,4C	
Mathematical Sciences Electives[2]			12
Electives[3]			12-16
	Total Credits		**27-31**
	Program Total Credits:		**120**

1 At least 2 of the 8 credits must be from category 3A in the AUCC. Remaining 6 credits can be from AUCC 3A, CS 165, CS 220, CS 253, CS 270 or any 300+ Math, CS, DSCI, ECE, MECH, PH, or STAT course; except for courses ending in -80 to -99 or DSCI 369.

2 Select 18 credits from upper division (300-400 level) MATH, CS, DSCI, STAT courses, or ECE 311 or ECE 312 except those courses ending in -80 to -99 or DSCI 369. At least 9 of the 18 credits must be from upper division MATH courses. At least 12 credits of ALL upper division MATH courses must be at the 400-level or above.

3 Select enough elective credits to bring the program total to a minimum of 120 credits, of which at least 42 must be upper-division (300- to 400-level).

Major Completion Map

Distinctive Requirements for Degree Program:

TO PREPARE FOR FIRST SEMESTER: The curriculum for the Major in Mathematics, General Mathematics Concentration assumes students enter college prepared to take calculus. Entering students who are not prepared to take calculus will need to fulfill pre-calculus requirements in the first semester: MATH 117, MATH 118, MATH 124, MATH 125, MATH 126. A minimum grade of C (2.000) is required in all mathematics, statistics, and computer science courses that are required by the major.

Freshman

Semester 1		**Critical**	**Recommended**	**AUCC**	**Credits**
CO 150	College Composition (GT-CO2)		X	1A	3
MATH 160	Calculus for Physical Scientists I (GT-MA1)		X	1B	4
MATH 192	First Year Seminar in Mathematical Sciences				1
Arts and Humanities (https://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#arts-humanities)				3B	3
Historical Perspectives (https://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#historical-perspectives)				3D	3

Pre-Calculus Requirements must be completed by the end of Semester 1, if needed (MATH 117, MATH 118, MATH 124, MATH 125, MATH 126).		X			
	Total Credits				**14**
Semester 2		**Critical**	**Recommended**	**AUCC**	**Credits**
MATH 161	Calculus for Physical Scientists II (GT-MA1)		X	1B	4
1C (https://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#aucc)				1C	3
Arts and Humanities (https://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#arts-humanities)				3B	3
Social and Behavioral Sciences (https://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#social-behavioral-sciences)				3C	3
Elective					3
CO 150 and MATH 160 must be completed by the end of Semester 2.		X			
	Total Credits				**16**
Sophomore					
Semester 3		**Critical**	**Recommended**	**AUCC**	**Credits**
MATH 261	Calculus for Physical Scientists III		X		4
PH 141	Physics for Scientists and Engineers I (GT-SC1)			3A	5
Select one course from the following:					3-4
DSCI 369	Linear Algebra for Data Science				
MATH 369	Linear Algebra I				
Advanced Writing (https://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#advanced-writing)				2	3
MATH 161 must be completed by the end of Semester 3.		X			
	Total Credits				**15-16**
Semester 4		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					2-4
CS 220	Discrete Structures and the Applications				
MATH 235	Introduction to Mathematical Reasoning				
Select one course from the following:					3
STAT 303/ ECE 303	Introduction to Communications Principles				
STAT 315	Intro to Theory and Practice of Statistics				
Select four credits from the following:					4
CS 150A	Culture and Coding: Java (GT-AH3)			3B	
CS 150B	Culture and Coding: Python (GT-AH3)			3B	
CS 152	Python for STEM				
CS 158/ MATH 158	Mathematical Algorithms in C				
CS 163	CS1---No Prior Programming Experience				
CS 164	CS1--Computational Thinking with Java				
MATH 151	Mathematical Algorithms in Matlab I				
MATH 152	Mathematical Algorithms in Maple				
STAT 158	Introduction to R Programming				
Biological and Physical Sciences (https://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#biological-physical-sciences)				3A	5
MATH 261 and MATH 369 must be completed by the end of Semester 4.		X			
	Total Credits				**14-16**
Junior					
Semester 5		**Critical**	**Recommended**	**AUCC**	**Credits**
MATH 317	Advanced Calculus of One Variable			4B	3
Select two courses from the following:				4A	6-7

MATH 345 or 340	Differential Equations Intro to Ordinary Differential Equations				
MATH 360	Mathematics of Information Security			4A	
MATH 366	Introduction to Abstract Algebra			4A	
Electives			X		6
	Total Credits				**15-16**
Semester 6		**Critical**	**Recommended**	**AUCC**	**Credits**
Biological and Physical Sciences (https://catalog.colostate.edu/general-catalog/all-university-core-curriculum/aucc/#biological-physical-sciences)				3A	3
Mathematical Sciences Electives (See Concentration Requirements Tab)					6
Elective			X		6
MATH 317 and MATH 360 or MATH 366 or MATH 466 must be completed by the end of Semester 6.		X			
	Total Credits				**15**
Senior					
Semester 7		**Critical**	**Recommended**	**AUCC**	**Credits**
Select one course from the following:					3
MATH 417	Advanced Calculus I			4B,4C	
MATH 435	Projects in Applied Mathematics			4C	
MATH 466	Abstract Algebra I			4A,4C	
Mathematical Sciences Electives (See Concentration Requirements Tab)					6
Electives					6
	Total Credits				**15**
Semester 8		**Critical**	**Recommended**	**AUCC**	**Credits**
Mathematical Sciences Electives (See Concentration Requirements Tab)		X			6
Electives					6-10
The benchmark courses for the 8th semester are the remaining courses in the entire program of study.		X			
	Total Credits				**12-16**
	Program Total Credits:				**120**