Mathematics (BA/BS)

The field of mathematics sits midway between the sciences and the humanities. Like the sciences, mathematical thought is very analytical, precise, and rigorous. But like the arts and humanities, mathematics is about exploring places of incredible grace and beauty, some of which can only be accessed through the power of imagination. You can explore geometry in ten-dimensional space, learn about advanced and exotic number systems, and study statistical techniques for finding patterns in data sets, all in a supportive and collaborative environment.

Students majoring in mathematics can choose a track from three areas: applied mathematics, pure mathematics, and secondary teaching. Applied mathematics studies physical, biological, and sociological aspects; pure mathematics focuses on the development of mathematical principles for their own sake; and secondary teaching prepares students to teach math. Regardless of your focus, the mathematics major will teach you the art of disciplined and logical thought, skills that are very valuable to future employers. A mathematics degree prepares you for work in fields like engineering, computer programming, information technology, financial planning, data management, business, and education.

Program Learning Outcomes

Upon successful completion of this program, students will be able to:

- Demonstrate proficiency with the calculational techniques and applications of calculus, including the ability to show that limits and derivatives do or do not exist.
- Demonstrate a familiarity with the breadth of mathematics, including linear algebra and at least one area from modern algebra, basic analysis, and number theory.
- Read and write mathematical proofs, producing arguments that are logically and syntactically correct.
- Demonstrate an in-depth understanding of some area of mathematics.
- For students on the secondary education track only: Pass the licensure examination in mathematics.

The department offers undergraduate preparation for positions in government, business, and industry and for graduate work in mathematics and statistics. Each student's major program is individually constructed in consultation with an advisor.

Upper-division courses used to satisfy major requirements must be taken for letter grades, and only one D grade (D+ or D or D–) may be counted toward the upper-division requirement. At least 12 credits in upper-division mathematics courses must be taken in residence at the university.

Statistical Methods I (MATH 425) cannot be used to satisfy requirements for a mathematics major or minor.

To qualify for a bachelor's degree with a major in mathematics, a student must satisfy the requirements for one of three options: the standard track, pure mathematics, or secondary teaching. In each option, most courses require calculus as a prerequisite, and in each option some of the courses require satisfying the bridge requirement.

- · Standard Track (p. 1)
- Pure Mathematics (p. 2)
- Secondary Teaching (p. 3)

Title

Mathematics Major - Standard Track

Code	Title	Credits
MATH 253	Calculus III	4
MATH 281-282	Several-Variable Calculus I-II	8
MATH 341-342	Elementary Linear Algebra	8
CS 122	Introduction to Programming and Problem Solving	4
Select one of the	following sets of Bridge courses:	12
MATH 231-232	2 and two of MATH 201–206	
MATH 261-262	2 and two of MATH 201–206	
MATH 307 and	four of MATH 201–206	
Select one of the	following Fundamentals sequences:	8
MATH 316– 317	Fundamentals of Analysis I-II	
MATH 347- 348	Fundamentals of Number Theory I-II	
MATH 391- 392	Fundamentals of Abstract Algebra I-II	
Select four of the sequence: ²	following, including at least one two-term	16
MATH 316	Fundamentals of Analysis I	
MATH 317	Fundamentals of Analysis II	
MATH 320	Theory of Differential Equations	
MATH 343	Statistical Models and Methods 3, 4	
MATH 345M	Probability and Statistics for Data Science 3, 4	
DSCI 345M	Probability and Statistics for Data Science 3, 4	
MATH 347	Fundamentals of Number Theory I	
MATH 348	Fundamentals of Number Theory II	
MATH 351	Elementary Numerical Analysis I	
MATH 352	Elementary Numerical Analysis II	
MATH 391	Fundamentals of Abstract Algebra I	
MATH 392	Fundamentals of Abstract Algebra II	
MATH 394	Geometries from an Advanced Viewpoint I	
MATH 395	Geometries from an Advanced Viewpoint II	
MATH 397	History and Applications of Calculus	
MATH 411	Functions of a Complex Variable I	
MATH 412	Functions of a Complex Variable II	
MATH 413	Introduction to Analysis I	
MATH 414	Introduction to Analysis II	
MATH 415	Introduction to Analysis III	
MATH 421M	Partial Differential Equations: Fourier Analysis I	
MATH 422	Partial Differential Equations: Fourier Analysis II	
MATH 431	Introduction to Topology I	
MATH 432	Introduction to Topology II	
MATH 433	Introduction to Differential Geometry	

T	otal Credits		60
	MATH 467	Stochastic Processes	
	MATH 463	Mathematical Methods of Regression Analysis and Analysis of Variance	
	MATH 462	Introduction to Mathematical Methods of Statistics II 3,4	
	MATH 461	Introduction to Mathematical Methods of Statistics I	
	MATH 458	Introduction to Mathematical Cryptography	
	MATH 456	Networks and Combinatorics	
	MATH 446	Introduction to Abstract Algebra III	
	MATH 445	Introduction to Abstract Algebra II	
	MATH 444	Introduction to Abstract Algebra I	
	MATH 441	Linear Algebra	

- For students who have completed Calculus with Theory I-III (MATH 261–263) with a grade of mid-C or better, the department will waive the requirement for Fundamentals of Analysis I-II (MATH 316–317).
- Sequences include Fundamentals of Analysis I-II (MATH 316–317), Fundamentals of Number Theory I-II (MATH 347–348), Elementary Numerical Analysis I-II (MATH 351–352), Fundamentals of Abstract Algebra I-II (MATH 391–392), Geometries from an Advanced Viewpoint I-II (MATH 394–395), Functions of a Complex Variable I-II (MATH 411–412), Partial Differential Equations: Fourier Analysis I (MATH 421M) Partial Differential Equations: Fourier Analysis II (MATH 422), Introduction to Analysis I-III (MATH 413–415), Introduction to Topology (MATH 431–432), Introduction to Abstract Algebra I-III (MATH 444–446), Introduction to Mathematical Methods of Statistics I-II (MATH 461–462), Introduction to Mathematical Methods of Statistics I (MATH 461) Stochastic Processes (MATH 467); credit for these courses cannot count for both the two-term Fundamentals sequence and the four upper-division electives.
- After completing Introduction to Mathematical Methods of Statistics II (MATH 462), students cannot receive credit for: Statistical Models and Methods (MATH 343), Probability and Statistics for Data Science (MATH 345M), nor Probability and Statistics for Data Science (DSCI 345M).
- Students can only use one of the following toward the two-course upper-division requirement: Statistical Models and Methods (MATH 343), Probability and Statistics for Data Science (MATH 345M), Probability and Statistics for Data Science (DSCI 345M), and Introduction to Mathematical Methods of Statistics II (MATH 462).

Mathematics Major - Pure Mathematics

Co	de	Title	Credits
MA	ATH 253	Calculus III	4
MA	ATH 281–282	Several-Variable Calculus I-II	8
MA	ATH 316-317	Fundamentals of Analysis I-II ¹	8
MA	ATH 341-342	Elementary Linear Algebra	8
CS	3 122	Introduction to Programming and Problem Solving	4
Se	lect one of the	following sets of Bridge courses:	12
	MATH 231– 232	Elements of Discrete Mathematics I-II (and two from MATH 201–206)	

MATH 262	261–	Calculus with Theory I-II (and two from MATH 201–206)	
MATH	307	Introduction to Proof (and four from MATH 201–206)	
Select one	e of the	following Abstract Algebra sequences:	8
MATH 392	391–	Fundamentals of Abstract Algebra I-II	
MATH 445		Introduction to Abstract Algebra I-II	
Select two	of the f	following: ²	8
MATH	320	Theory of Differential Equations	
MATH	343	Statistical Models and Methods ³	
MATH	345M	Probability and Statistics for Data Science 3, 4	
DSCI 3	845M	Probability and Statistics for Data Science 3, 4	
MATH	347	Fundamentals of Number Theory I	
MATH	348	Fundamentals of Number Theory II	
MATH	351	Elementary Numerical Analysis I	
MATH	352	Elementary Numerical Analysis II	
MATH	391	Fundamentals of Abstract Algebra I	
MATH	392	Fundamentals of Abstract Algebra II	
MATH	394	Geometries from an Advanced Viewpoint I	
MATH	395	Geometries from an Advanced Viewpoint II	
MATH	397	History and Applications of Calculus	
MATH	411	Functions of a Complex Variable I	
MATH	412	Functions of a Complex Variable II	
MATH	413	Introduction to Analysis I	
MATH	414	Introduction to Analysis II	
MATH	415	Introduction to Analysis III	
MATH	421M	Partial Differential Equations: Fourier Analysis I	
MATH	422	Partial Differential Equations: Fourier Analysis II	
MATH	431	Introduction to Topology I	
MATH	432	Introduction to Topology II	
MATH	433	Introduction to Differential Geometry	
MATH	441	Linear Algebra	
MATH	444	Introduction to Abstract Algebra I	
MATH	445	Introduction to Abstract Algebra II	
MATH	446	Introduction to Abstract Algebra III	
MATH	461	Introduction to Mathematical Methods of Statistics I	
MATH	462	Introduction to Mathematical Methods of Statistics II $^{\rm 3}$	
MATH	463	Mathematical Methods of Regression Analysis and Analysis of Variance	
MATH	467	Stochastic Processes	
Total Cre	dits		60

For students who have completed Calculus with Theory I-III (MATH 261–263) with grades of mid-C or better, the department will waive the requirement for Fundamentals of Analysis I-II (MATH 316–317).

- The two-term abstract algebra sequence—Introduction to Abstract Algebra I (MATH 444), Introduction to Abstract Algebra II (MATH 445)—cannot also count toward the two upper-division electives.
- Students can only use one of the following toward the twocourse upper-division requirement: Statistical Models and Methods (MATH 343), Probability and Statistics for Data Science (MATH 345M), Probability and Statistics for Data Science (DSCI 345M), and Introduction to Mathematical Methods of Statistics II (MATH 462).
- After completing Introduction to Mathematical Methods of Statistics II (MATH 462), students cannot receive credit for: Statistical Models and Methods (MATH 343), Probability and Statistics for Data Science (MATH 345M), nor Probability and Statistics for Data Science (DSCI 345M).

Mathematics Major - Secondary Teaching

CodeTitleCreditsMATH 253Calculus III4MATH 281Several-Variable Calculus I4MATH 341Elementary Linear Algebra4MATH 343Statistical Models and Methods4CS 122Introduction to Programming and Problem Solving4Select one of the following sets of Bridge courses:12MATH 231-Elements of Discrete Mathematics I-II (and two from MATH 201-206)MATH 261-Calculus with Theory I-II (and two from MATH 201-206)MATH 307Introduction to Proof (and from from MATH 201-206)Select two of the following Fundamentals sequences:116MATH 316- 317Fundamentals of Analysis I-II16MATH 347- 348Fundamentals of Number Theory I-II348MATH 391- 392Fundamentals of Abstract Algebra I-II392MATH 394-395Geometries from an Advanced Viewpoint I-II8MATH 397History and Applications of Calculus4			_
MATH 281 Several-Variable Calculus I 4 MATH 341 Elementary Linear Algebra 4 MATH 343 Statistical Models and Methods 4 CS 122 Introduction to Programming and Problem Solving Select one of the following sets of Bridge courses: 12 MATH 231— Elements of Discrete Mathematics I-II (and two from MATH 201–206) MATH 261— Calculus with Theory I-II (and two from MATH 201–206) MATH 307 Introduction to Proof (and from from MATH 201–206) Select two of the following Fundamentals sequences: 1 16 MATH 316— Fundamentals of Analysis I-II 317 MATH 347— Fundamentals of Number Theory I-II 348 MATH 391— Fundamentals of Abstract Algebra I-II 392 MATH 394–395 Geometries from an Advanced Viewpoint I- II	Code	Title	Credits
MATH 341 Elementary Linear Algebra 4 MATH 343 Statistical Models and Methods 4 CS 122 Introduction to Programming and Problem Solving Select one of the following sets of Bridge courses: 12 MATH 231— Elements of Discrete Mathematics I-II (and two from MATH 201–206) MATH 261— Calculus with Theory I-II (and two from MATH 201–206) MATH 307 Introduction to Proof (and from from MATH 201–206) Select two of the following Fundamentals sequences: 1 16 MATH 316— Fundamentals of Analysis I-II 317 MATH 347— Fundamentals of Number Theory I-II 348 MATH 391— Fundamentals of Abstract Algebra I-II 392 MATH 394—395 Geometries from an Advanced Viewpoint I-II	MATH 253	Calculus III	4
MATH 343 Statistical Models and Methods 4 CS 122 Introduction to Programming and Problem Solving Select one of the following sets of Bridge courses: 12 MATH 231— Elements of Discrete Mathematics I-II (and two from MATH 201–206) MATH 261— Calculus with Theory I-II (and two from MATH 201–206) MATH 307 Introduction to Proof (and from from MATH 201–206) Select two of the following Fundamentals sequences: 1 16 MATH 316— Fundamentals of Analysis I-II 317 MATH 347— Fundamentals of Number Theory I-II 348 MATH 391— Fundamentals of Abstract Algebra I-II 392 MATH 394–395 Geometries from an Advanced Viewpoint I- II	MATH 281	Several-Variable Calculus I	4
CS 122 Introduction to Programming and Problem Solving Select one of the following sets of Bridge courses: 12 MATH 231— Elements of Discrete Mathematics I-II (and two from MATH 201–206) MATH 261— Calculus with Theory I-II (and two from MATH 201–206) MATH 307 Introduction to Proof (and from from MATH 201–206) Select two of the following Fundamentals sequences: 1 16 MATH 316— Fundamentals of Analysis I-II 317 MATH 347— Fundamentals of Number Theory I-II 348 MATH 391— Fundamentals of Abstract Algebra I-II 392 MATH 394–395 Geometries from an Advanced Viewpoint I-II 8	MATH 341	Elementary Linear Algebra	4
Solving Select one of the following sets of Bridge courses: MATH 231— Elements of Discrete Mathematics I-II (and two from MATH 201–206) MATH 261— Calculus with Theory I-II (and two from MATH 201–206) MATH 307 Introduction to Proof (and from from MATH 201–206) Select two of the following Fundamentals sequences: 1 16 MATH 316— Fundamentals of Analysis I-II 317 MATH 347— Fundamentals of Number Theory I-II 348 MATH 391— Fundamentals of Abstract Algebra I-II 392 MATH 394–395 Geometries from an Advanced Viewpoint I- II	MATH 343	Statistical Models and Methods	4
MATH 231— Elements of Discrete Mathematics I-II (and two from MATH 201–206) MATH 261— Calculus with Theory I-II (and two from MATH 201–206) MATH 307 Introduction to Proof (and from from MATH 201–206) Select two of the following Fundamentals sequences: 1 16 MATH 316— Fundamentals of Analysis I-II 317 MATH 347— Fundamentals of Number Theory I-II 348 MATH 391— Fundamentals of Abstract Algebra I-II 392 MATH 394–395 Geometries from an Advanced Viewpoint I- II	CS 122	9 9	4
232 two from MATH 201–206) MATH 261– Calculus with Theory I-II (and two from 262 MATH 201–206) MATH 307 Introduction to Proof (and from from MATH 201–206) Select two of the following Fundamentals sequences: 1 16 MATH 316– Fundamentals of Analysis I-II 317 MATH 347– Fundamentals of Number Theory I-II 348 MATH 391– Fundamentals of Abstract Algebra I-II 392 MATH 394–395 Geometries from an Advanced Viewpoint I- II	Select one of the	following sets of Bridge courses:	12
262 MATH 201–206) MATH 307 Introduction to Proof (and from from MATH 201–206) Select two of the following Fundamentals sequences: 1 16 MATH 316— Fundamentals of Analysis I-II 317 MATH 347— Fundamentals of Number Theory I-II 348 MATH 391— Fundamentals of Abstract Algebra I-II 392 MATH 394–395 Geometries from an Advanced Viewpoint I- II		•	
MATH 201–206) Select two of the following Fundamentals sequences: 1 16 MATH 316— Fundamentals of Analysis I-II 317 MATH 347— Fundamentals of Number Theory I-II 348 MATH 391— Fundamentals of Abstract Algebra I-II 392 MATH 394–395 Geometries from an Advanced Viewpoint I- II			
MATH 316— Fundamentals of Analysis I-II 317 MATH 347— Fundamentals of Number Theory I-II 348 MATH 391— Fundamentals of Abstract Algebra I-II 392 MATH 394–395 Geometries from an Advanced Viewpoint I- II	MATH 307	`	
317 MATH 347– Fundamentals of Number Theory I-II 348 MATH 391– Fundamentals of Abstract Algebra I-II 392 MATH 394–395 Geometries from an Advanced Viewpoint I- II	Select two of the	following Fundamentals sequences: 1	16
348 MATH 391— Fundamentals of Abstract Algebra I-II 392 MATH 394–395 Geometries from an Advanced Viewpoint I- II		Fundamentals of Analysis I-II	
392 MATH 394–395 Geometries from an Advanced Viewpoint I- 8		Fundamentals of Number Theory I-II	
II		Fundamentals of Abstract Algebra I-II	
MATH 397 History and Applications of Calculus 4	MATH 394–395	·	8
	MATH 397	History and Applications of Calculus	4

For students who have completed Calculus with Theory I-III (MATH 261–263) with grades of mid-C or better, the department will waive the requirement for Fundamentals of Analysis I-II (MATH 316–317).

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Four-Year Degree Plan

Total Credits

The degree plan shown is only a sample of how students may complete their degrees in four years. There are alternative ways. Students should consult their advisor to determine the best path for them.

To enroll with courses that have prerequisites, students must complete the prerequisite course with grades of C- or better or P. All upper-division mathematics courses must be taken for letter grades to count toward a

mathematics major or minor, and only one D grade (D+ or D or D-) may be counted toward the upper-division requirements for the major or minor.

- Standard Track
- Pure Mathematics (p. 5)
- Secondary Teaching (p. 7)

Bachelor of Arts in Mathematics: Standard Track

Course	Title	Credits Miles	stones
First Year Fall			
MATH 203	Analysis and Number Theory Math Lab		2
MATH 251	Calculus I		4
WR 121Z	Composition I		4
First term of fi	rst-year second-language sequence		5
	Credits	1	5
Winter			
MATH 252	Calculus II		4
WR 122Z or WR 123	Composition II or College Composition III		4
MATH 201	Algebra Math Lab		2
Second term	of first-year second-language sequence		5
	Credits	1	5
Spring			
MATH 253	Calculus III		4
Third term of	first-year second-language sequence		5
Social science	e area-satisfying course		4
Science group	area-satisfying course		4
	Credits	1	7
Second Year			
Fall			
MATH 281	Several-Variable Calculus I		4
MATH 341	Elementary Linear Algebra		4
Arts and letter	s area-satisfying course		4
First term of s	econd-year second-language sequence		4
	Credits	1	6
Winter			
MATH 282	Several-Variable Calculus II		4
MATH 342	Elementary Linear Algebra		4
Second term of sequence	of second-year second-language		4
Social science	e area-satisfying course		4
	Credits	1	6
Spring			
MATH 202	Geometry Math Lab		2
MATH 205	Foundations Math Lab		2
MATH 307	Introduction to Proof	Mathemati major bridge requiremer completed	4

4 Mathematics (BA/BS)

	second-year second-language sequence	e BA language requirement completed	4
Ocience area	Credits		16
Third Year Fall	ordana		
MATH 316	Fundamentals of Analysis I		4
Arts and lette	rs group satisfying course		4
Science grou	p-satisfying course	Science group requiremer completed	4
Upper-divisio	n Elective		4
	Credits		16
Winter			
MATH 317	Fundamentals of Analysis II	Mathematics major fundamentals requirement completed	4
Social scienc	e group satisfying course		4
Arts and lette	rs group satisfying course		4
Upper-divisio	n elective		4
	Credits		16
Spring			
MATH 458	Introduction to Mathematical Cryptography		4
CS 122	Introduction to Programming and Problem Solving		4
Social scienc	e area satisfying course	Social science area requiremer completed	4
Arts and lette	rs area satisfying course	Arts and letters area requirement completed	4
	Credits		16
Fourth Year Fall			
MATH 461	Introduction to Mathematical Methods of Statistics I		4
Upper-divisio	n elective		4
Upper-divisio	n elective	Completed the multicultural requirement	4
	Credits	•	12

Winter			
MATH 462	Introduction to Mathematical Methods of Statistics II	Upper- division mathematics sequence completed	4
Upper-division	elective		4
Upper-division	elective	Need 26 upper- division credits beyond the mathematics major	4
	Credits		12
Spring			
MATH 397	History and Applications of Calculus	Mathematics major requirements completed	4
Upper-division	elective		4
Elective			4
Elective		180 credits completed	4
	Credits		16
	Total Credits		183

Bachelor of Science in Mathematics: Standard Track

Course First Year Fall	Title	Credits Milestone	
MATH 251	Calculus I	BS 4 mathematics requirement completed;	
WR 121Z	Composition I	4	
Social science	ce group-satisfying course	4	
Science grou	up-satisfying course	4	
	Credits	16	
Winter			
WR 122Z or WR 123	Composition II 3 or College Composition III	4	
Arts and lette	ers group-satisfying course	4	
MATH 201	Algebra Math Lab	2	
MATH 206	Combinatorics Math Lab	2	
MATH 252	Calculus II	4	
	Credits	16	
Spring			
MATH 253	Calculus III	4	
Arts and lette	ers group-satisfying course	4	
Social science group-satisfying course			

Elective			4
	Credits		16
Second Year			
Fall			
MATH 202	Geometry Math Lab		2
MATH 205	Foundations Math Lab		2
MATH 281	Several-Variable Calculus I		4
Arts and letter	rs group-satisfying course		4
Science group	o-satisfying course		4
	Credits		16
Winter			
MATH 282	Several-Variable Calculus II		4
MATH 341	Elementary Linear Algebra		4
Elective			4
Social science	e group-satisfying course		4
	Credits		16
Spring			
MATH 307	Introduction to Proof	Mathemati major bridge requiremer completed	4
MATH 342	Elementary Linear Algebra		4
Arts and letter	rs group-satisfying course	Arts and letters group requiremer completed	4
Science group	o-satisfying course		4
	Credits		16
Third Year Fall			
CS 210	Computer Science I		4
MATH 391	Fundamentals of Abstract Algebra I		4
Social science	e group-satisfying course	Social science group requirement completed	4
Upper-division	n Elective		4
	Credits		16
Winter			
MATH 392	Fundamentals of Abstract Algebra II	Mathemation major fundament requirement completed	4
Upper-division	n elective		4
Elective			4
Elective			4
Spring	Credits		16
MATH 397	History and Applications of Calculus		4
Upper-division	n elective		4

Upper-division	n elective		4
Elective			4
	Credits		16
Fourth Year Fall			
MATH 444	Introduction to Abstract Algebra I		4
Upper-division	n elective		4
Elective		Completed multicultura requiremer	4
	Credits		12
Winter			
MATH 445	Introduction to Abstract Algebra II	Mathemati- major upper- division sequence requiremer completed	4
Upper-division	n elective		4
Upper-division	n elective		4
	Credits		12
Spring			
MATH 458	Introduction to Mathematical Cryptography	Mathemati major completed	4
Elective			4
Elective		180 credits completed	4
	Credits		12
	Total Credits		180

Bachelor of Arts in Mathematics: Pure Mathematics

Matricilatios			
Course First Year Fall	Title	Credits Milestones	
MATH 203	Analysis and Number Theory Math Lab	2	
MATH 251	Calculus I	4	
WR 121Z	Composition I	4	
First term of f	first-year second-language sequence	5	
	Credits	15	
Winter			
WR 122Z or WR 123	Composition II or College Composition III	4	
MATH 201	Algebra Math Lab	2	
MATH 252	Calculus II	4	
Second term	of first-year second-language sequence	5	
	Credits	15	
Spring			
MATH 253	Calculus III	4	
Third term of	first-year second-language sequence	5	
Social science	e group-satisfying course	4	

ocience group	group-satisfying course Credits		4
Casand Vasu	Credits		17
Second Year Fall			
MATH 281	Several-Variable Calculus I		4
MATH 341	Elementary Linear Algebra		_
	rs group-satisfying course		_
	econd-year second-language sequence		_
	Credits		16
Winter			
MATH 282	Several-Variable Calculus II		_
MATH 342	Elementary Linear Algebra		
Second term	of second-year second-language		4
sequence			
Social science	e group-satisfying course		4
	Credits		16
Spring			
MATH 202	Geometry Math Lab		2
MATH 205	Foundations Math Lab		2
MATH 307	Introduction to Proof	MATH	4
		major	
		Bridge	
		requiremer	
Third term of	second-year second-language sequence	completed	_
Tillia tellii oi s	second-year second-language sequence	language	•
		requirement	
		completed	
Science group	o-satisfying course		4
	Credits		16
Third Year			
Fall			
MATH 316	Fundamentals of Analysis I		4
Arts and letter	rs group satisfying course		4
Science group	o-satisfying course	Science	4
		group	
		requiremer completed	
Upper-divisior	Flective	completed	_
opper-division	Credits		16
Winter	Credits		10
MATH 317	Fundamentals of Analysis II	MATH	4
MAID 317	Fundamentals of Analysis II	major	2
		Analysis	
		requirement	
		completed	
Social science	e group satisfying course		4
Arts and letter	s group satisfying course		4
Upper-division	n elective		4
	Credits		16
Spring			
-p9			
CS 122	Introduction to Programming and		4
	Introduction to Programming and Problem Solving		2

	Credits		16
Elective		180 credits completed	4
Elective			4
Upper-divisio	n elective		4
MATH 320	Theory of Differential Equations (MATH major requirements completed)		4
Spring	Credits		12
Upper-divisio			4
Upper-divisio	n elective		4
MATH 445	Introduction to Abstract Algebra II	MATH major Abstract Algebra requirement completed	4
Winter	Credits		12
Upper-divisio		Complete the multi- cultural requirement by now	4
Upper-divisio		0	4
MATH 444	Introduction to Abstract Algebra I		4
Fourth Year Fall			
	Credits	requirement completed	16
Arts and lette	rs group satisfying course	Arts and letters group	4
Social scienc	e group satisfying course	science group requiremer completed	4
Coolel colone	o group potiofying course	Social	4

Bachelor of Science in Mathematics: Pure Mathematics

Course	Title	Credits Mi	lestones
First Year			
Fall			
WR 121Z	Composition I		4
MATH 251	Calculus I (Only one MATH course can be counted toward science group requirement)	BS MATH requiremer completed	4
Social science	e group-satisfying course		4
Science grou	p-satisfying course		4
	Credits		16

WR 122Z	Composition II		4
or WR 123	or College Composition III		
MATH 201	Algebra Math Lab		2
MATH 206	Combinatorics Math Lab		2
MATH 252	Calculus II		4
Arts and letter	rs group-satisfying course		4
	Credits		16
Spring			
MATH 253	Calculus III		4
Arts and letter	rs group-satisfying course		4
Social science	e group-satisfying course		4
Elective			4
	Credits		16
Second Year			
Fall			
MATH 202	Geometry Math Lab		2
MATH 205	Foundations Math Lab		2
MATH 281	Several-Variable Calculus I		4
Arts and letter	s group-satisfying course		4
Science group	o-satisfying course		4
	Credits		16
Winter			
MATH 282	Several-Variable Calculus II		4
MATH 341	Elementary Linear Algebra		4
Elective			4
Social science	e group-satisfying course		4
	Credits		16
Spring			
MATH 307	Introduction to Proof	MATH	4
WATT 307		1417 (1 1 1	4
WATT 507		major	4
WATT 307		major Bridge	4
WATT 307		major Bridge requiremer	4
	Flementary Linear Algebra	major Bridge	
MATH 342	Elementary Linear Algebra	major Bridge requiremer completed	4
MATH 342	Elementary Linear Algebra	major Bridge requiremer completed	
MATH 342	· -	major Bridge requiremer completed	4
MATH 342	· -	major Bridge requiremer completed Arts and letters	4
MATH 342	· -	major Bridge requiremer completed Arts and letters group	4
MATH 342 Arts and letter	· -	major Bridge requiremer completed Arts and letters group requiremer	4
MATH 342 Arts and letter	rs group-satisfying course	major Bridge requiremer completed Arts and letters group requiremer	4
MATH 342 Arts and letter	es group-satisfying course	major Bridge requiremer completed Arts and letters group requiremer	4 4
MATH 342 Arts and letter	es group-satisfying course	major Bridge requiremer completed Arts and letters group requiremer	4 4
MATH 342 Arts and letter Science group Third Year	p-satisfying course Credits Computer Science I	major Bridge requiremer completed Arts and letters group requiremer	4 4
MATH 342 Arts and letter Science group Third Year Fall	o-satisfying course Credits	major Bridge requiremer completed Arts and letters group requiremer	4 4 16
MATH 342 Arts and letter Science group Third Year Fall CS 210 MATH 391	p-satisfying course Credits Computer Science I	major Bridge requiremer completed Arts and letters group requiremer completed	4 4 16
MATH 342 Arts and letter Science group Third Year Fall CS 210 MATH 391	consective description of the section of the sectio	major Bridge requiremer completed Arts and letters group requiremer completed Social science	4 4 16 4 4
MATH 342 Arts and letter Science group Third Year Fall CS 210 MATH 391	consective description of the section of the sectio	major Bridge requiremer completed Arts and letters group requiremer completed Social science group	4 4 16 4 4
MATH 342 Arts and letter Science group Third Year Fall CS 210 MATH 391	consective description of the section of the sectio	major Bridge requiremer completed Arts and letters group requiremer completed Social science group requirement	4 4 16 4 4
MATH 342 Arts and letter Science group Third Year Fall CS 210 MATH 391 Social science	o-satisfying course Credits Computer Science I Fundamentals of Abstract Algebra I e group-satisfying course	major Bridge requiremer completed Arts and letters group requiremer completed Social science group	4 4 16 4 4
MATH 342 Arts and letter Science group Third Year Fall CS 210 MATH 391	o-satisfying course Credits Computer Science I Fundamentals of Abstract Algebra I e group-satisfying course	major Bridge requiremer completed Arts and letters group requiremer completed Social science group requirement	4 4 16 4 4

	Total Credits	_	180
	Credits Total Credits		12
Elective	Cradite	180 credits completed	4
Elective		400	4
MATH 458	Introduction to Mathematical Cryptography	MATH major completed	4
Spring			
	Credits		12
Upper-division	elective		4
Upper-division			4
MATH 317	Fundamentals of Analysis II	MATH major Analysis requiremer complete	4
Winter	Fundamentals of Arabasia II	MATU	4
	Credits	by now	12
Elective		Complete the multi- cultural requiremer by now	4
Upper-division	elective		4
MATH 316	Fundamentals of Analysis I		4
Fall			
Fourth Year			
	Credits		16
Elective			4
Upper-division			4
Upper-division			4
Spring MATH 320	Theory of Differential Equations		4
LIECTIVE	Credits		16
Elective Elective			4
Upper-division	elective		4
		major Abstract Algebra requiremer completed	
Winter MATH 392	Fundamentals of Abstract Algebra II	MATH	4

Bachelor of Arts in Mathematics: Secondary Teaching

Course First Year Fall	Title	Credits Milestones
WR 121Z	Composition I	4
MATH 203	Analysis and Number Theory Math Lab	2

MATH 251	Calculus I (Only one MATH course can be counted toward science group requirement)		4
First term of fi	rst-year second-language sequence		5
	Credits		15
Winter			
WR 122Z	Composition II		4
or WR 123			
MATH 201	Algebra Math Lab		2
MATH 252	Calculus II		4
Second term of	of first-year second-language sequence		5
	Credits		15
Spring			
MATH 253	Calculus III		4
Third term of f	irst-year second-language sequence		5
Social science	group-satisfying course		4
Science group	o-satisfying course		4
	Credits		17
Second Year			
Fall			
MATH 281	Several-Variable Calculus I		4
MATH 341	Elementary Linear Algebra		4
Arts and letter	s group-satisfying course		4
First term of s	econd-year second-language sequence		4
	Credits		16
Winter			
CS 122	Introduction to Programming and Problem Solving		4
MATH 307	Introduction to Proof		4
Second term of	of second-year second-language		4
sequence			
Social science	e group-satisfying course		4
	Credits		16
Spring			
MATH 202	Geometry Math Lab		2
MATH 205	Foundations Math Lab	MATH major Bridge requirement completed	2
MATH 343	Statistical Models and Methods		4
Third term of s	second-year second-language sequence	language requirement	4
Science group	o-satisfying course	completed Science group requiremer completed	4
_	Credits		16
Third Year Fall			
MATH 391	Fundamentals of Abstract Algebra I		4

Science group			
	-satisfying course	Science group requirement completed	4
Arts and letter	s group satisfying course		4
Upper-division	Elective		4
	Credits		16
Winter			
MATH 392	Fundamentals of Abstract Algebra II		4
Upper-division	•		4
Social science	group satisfying course		4
	s group satisfying course		4
	Credits		16
Spring			
MATH 397	History and Applications of Calculus		4
	group satisfying course	Social	4
Godiai science	group satisfying course	science group requirement completed	7
Arts and letter	s group satisfying course	Arts and letters group requiremer completed	4
Elective			4
	Credits		16
Fourth Year			
Fall			
14 A TI 1 0 0 4			
MATH 394	Geometries from an Advanced Viewpoint I		4
Upper-division	Viewpoint I		4
	Viewpoint I elective	Complete the multi- cultural requirement by now	
Upper-division	Viewpoint I elective	the multi- cultural requirement	4
Upper-division	Viewpoint I elective elective	the multi- cultural requirement	4
Upper-division Upper-division	Viewpoint I elective elective	the multi- cultural requirement	4
Upper-division Upper-division	Viewpoint I elective elective Credits	the multi- cultural requirement	4 4
Upper-division Upper-division Winter MATH 347	Viewpoint I elective elective Credits Fundamentals of Number Theory I Geometries from an Advanced Viewpoint II	the multi- cultural requirement	12 4
Upper-division Upper-division Winter MATH 347 MATH 395	Viewpoint I elective elective Credits Fundamentals of Number Theory I Geometries from an Advanced Viewpoint II elective	the multi- cultural requirement	12 4 4
Upper-division Upper-division Winter MATH 347 MATH 395 Upper-division	Viewpoint I elective elective Credits Fundamentals of Number Theory I Geometries from an Advanced Viewpoint II elective	the multi- cultural requirement	12 4 4
Upper-division Upper-division Winter MATH 347 MATH 395 Upper-division	Viewpoint I elective elective Credits Fundamentals of Number Theory I Geometries from an Advanced Viewpoint II elective elective	the multi- cultural requirement	12 4 4 4
Upper-division Upper-division Winter MATH 347 MATH 395 Upper-division Upper-division	Viewpoint I elective elective Credits Fundamentals of Number Theory I Geometries from an Advanced Viewpoint II elective elective	the multi- cultural requirement	12 4 4 4

Elective		180 credits completed	4
	Credits		12
	Total Credits		183

Bachelor of Science in Mathematics: Secondary Teaching

Course First Year Fall	Title	Credits Mi	lestones
WR 121Z	Composition I		4
MATH 251	Calculus I (Only one MATH course can be counted toward science group requirement)	BS MATH requiremer completed	4
Social science	e group-satisfying course		4
Science group	o-satisfying course		4
	Credits		16
Winter			
WR 122Z or WR 123	Composition II or College Composition III		4
MATH 201	Algebra Math Lab		2
MATH 206	Combinatorics Math Lab		2
MATH 252	Calculus II		4
	rs group-satisfying course		4
	Credits		16
Spring			
MATH 253	Calculus III		4
Arts and letter	s group-satisfying course		4
	e group-satisfying course		4
Elective			4
	Credits		16
Second Year			
Fall			
MATH 202	Geometry Math Lab		2
MATH 205	Foundations Math Lab		2
MATH 281	Several-Variable Calculus I		4
Arts and letter	s group-satisfying course		4
Science group	o-satisfying course		4
	Credits		16
Winter			
MATH 307	Introduction to Proof	MATH major Bridge requirement completed	4
MATH 341	Elementary Linear Algebra		4
Elective	, 3.1.1.		4
Social science	e group-satisfying course		4
	Credits		16
Spring			
CS 122	Introduction to Programming and Problem Solving		4

MATH 343	Statistical Models and Methods		4
Arts and letter	s group-satisfying course	Arts and letters	4
		group	
		requiremer	
		completed	
Science group	o-satisfying course		4
	Credits		16
Third Year			
Fall			
MATH 391	Fundamentals of Abstract Algebra I		4
Social science	group-satisfying course	Social	4
		science	
		group requiremer	
		completed	
Elective			4
Upper-division	n elective		4
	Credits		16
Winter			
MATH 347	Fundamentals of Number Theory I		4
MATH 392	Fundamentals of Abstract Algebra II	MATH	4
		major	
		Abstract Algebra	
		requirement	
		completed	
Upper-division	n elective		4
Upper-division Elective	n elective		4
	n elective Credits		
			4
Elective			4
Elective Spring	Credits Fundamentals of Number Theory II		4 16
Spring MATH 348 Upper-division Upper-division	Credits Fundamentals of Number Theory II		4 16 4
Spring MATH 348 Upper-division	Credits Fundamentals of Number Theory II n elective n elective		4 4 4 4 4
Spring MATH 348 Upper-division Upper-division Elective	Credits Fundamentals of Number Theory II		4 16 4 4 4
Spring MATH 348 Upper-division Upper-division Elective Fourth Year	Credits Fundamentals of Number Theory II n elective n elective		4 4 4 4 4
Spring MATH 348 Upper-division Upper-division Elective Fourth Year Fall	Credits Fundamentals of Number Theory II n elective n elective Credits		4 4 4 4 4 16
Spring MATH 348 Upper-division Upper-division Elective Fourth Year	Credits Fundamentals of Number Theory II n elective n elective		4 4 4 4 4
Spring MATH 348 Upper-division Upper-division Elective Fourth Year Fall	Credits Fundamentals of Number Theory II n elective n elective Credits Geometries from an Advanced Viewpoint I		4 4 4 4 4 16
Spring MATH 348 Upper-division Upper-division Elective Fourth Year Fall MATH 394	Credits Fundamentals of Number Theory II n elective n elective Credits Geometries from an Advanced Viewpoint I	Complete	4 16 4 4 4 16
Spring MATH 348 Upper-division Upper-division Elective Fourth Year Fall MATH 394 Upper-division	Credits Fundamentals of Number Theory II n elective n elective Credits Geometries from an Advanced Viewpoint I	the multi-	4 16 4 4 4 16
Spring MATH 348 Upper-division Upper-division Elective Fourth Year Fall MATH 394 Upper-division	Credits Fundamentals of Number Theory II n elective n elective Credits Geometries from an Advanced Viewpoint I	the multi- cultural	4 16 4 4 4 16
Spring MATH 348 Upper-division Upper-division Elective Fourth Year Fall MATH 394 Upper-division	Credits Fundamentals of Number Theory II n elective n elective Credits Geometries from an Advanced Viewpoint I	the multi-	4 16 4 4 4 16
Spring MATH 348 Upper-division Upper-division Elective Fourth Year Fall MATH 394 Upper-division	Credits Fundamentals of Number Theory II n elective n elective Credits Geometries from an Advanced Viewpoint I	the multi- cultural requiremer	4 16 4 4 4 16
Spring MATH 348 Upper-division Upper-division Elective Fourth Year Fall MATH 394 Upper-division	Credits Fundamentals of Number Theory II n elective n elective Credits Geometries from an Advanced Viewpoint I n elective	the multi- cultural requiremer	4 16 4 4 4 16
Spring MATH 348 Upper-division Upper-division Elective Fourth Year Fall MATH 394 Upper-division Elective	Credits Fundamentals of Number Theory II n elective n elective Credits Geometries from an Advanced Viewpoint I n elective	the multi- cultural requiremer	4 16 4 4 4 16
Spring MATH 348 Upper-division Upper-division Elective Fourth Year Fall MATH 394 Upper-division Elective	Credits Fundamentals of Number Theory II n elective n elective Credits Geometries from an Advanced Viewpoint I n elective Credits Credits	the multi- cultural requiremer	4 16 4 4 4 16 4 4 4
Spring MATH 348 Upper-division Upper-division Elective Fourth Year Fall MATH 394 Upper-division Elective	Credits Fundamentals of Number Theory II n elective n elective Credits Geometries from an Advanced Viewpoint I n elective Credits Credits	the multi- cultural requiremer	4 16 4 4 4 16 4 4 4
Spring MATH 348 Upper-division Upper-division Elective Fourth Year Fall MATH 394 Upper-division Elective	Credits Fundamentals of Number Theory II n elective n elective Credits Geometries from an Advanced Viewpoint I n elective Credits Credits	the multi- cultural requiremer	4 16 4 4 4 16 4 4 4 4

Spring

MATH 397	History and Applications of Calculus (MATH major requirements completed)	4
Elective		4
Elective	180 credits completed	4
	Credits	12
	Total Credits	180