

B.S. IN MATHEMATICS - MATHEMATICS CONCENTRATION

Curriculum

Code	Title	Credits
GENERAL EDUCATION REQUIREMENTS (https://catalog.wcupa.edu/undergraduate/general-education-requirements/)		
Academic Foundations		
	First Year Experience requirement	4
	English Composition requirement	6-7
	Mathematics requirement	3-4
	Interdisciplinary requirement	3
	Diverse Communities requirement	3
	Ethics requirement	3
Distributed Disciplinary Foundations		
	Science requirement	6-8
CSC 141	Computer Science I	
PHY 170	Physics I	
	Behavioral & Social Science requirement	6
	Humanities requirement	6
	Arts requirement	3
ADDITIONAL BACCALAUREATE REQUIREMENTS (https://catalog.wcupa.edu/undergraduate/general-education-requirements/)		
University Requirements		
	Writing Emphasis requirement	9
ENG 371	Technical Writing	
MAT 480	Capstone in Mathematics	
	Speaking Emphasis requirement	9
SPK 230	Business and Professional Speech Communication	
MAT 480	Capstone in Mathematics	
Degree Requirements		
	Capstone requirement	1-15
MAJOR REQUIREMENTS		
Major Courses		
MAT 161	Calculus I	4
MAT 162	Calculus II	4
MAT 200	The Nature of Mathematics	3
MAT 261	Calculus III	4
MAT 311	Linear Algebra ¹	3
MAT 343	Differential Equations	3
MAT 411	Algebra I	3
MAT 421	Mathematical Statistics I	3
MAT 441	Real Analysis I	3
MAT 445	Complex Variables	3
Mathematics Electives		
	Select 18 credit hours from upper-division (300-level or higher) mathematics courses; at least one course from each of the areas below.	18
Algebra elective		
MAT 321	Combinatorics and Graph Theory	
MAT 412	Algebra II	
MAT 414	Theory of Numbers	

MAT 415	Introduction to Cryptography	
Analysis elective		
MAT 432	Topology	
MAT 442	Real Analysis II	
MAT 443	Applied Analysis I	
MAT 444	Applied Analysis II	
Applied mathematics elective		
MAT 325	Numerical Analysis I	
MAT 371	Mathematics of Finance	
MAT 413	Computer Algebra	
MAT 415	Introduction to Cryptography	
MAT 422	Mathematical Statistics II	
MAT 423	Applied Probability	
MAT 425	Numerical Analysis II	
MAT 427	Introduction to Optimization Techniques	
MAT 433	Mathematical Modeling	
MAT 478	Fundamentals of Actuarial Science	
MAT 479	Financial Calculus	
STA 319	Applied Statistics	
Related/Cognate Requirements		
CSC 141	Computer Science I ¹	3
ENG 371	Technical Writing ¹	3
PHY 170	Physics I ¹	4
PHY 180	Physics II	4
SPK 230	Business and Professional Speech Communication ¹	3
Capstone Requirement		
MAT 480	Capstone in Mathematics ³	3
Free Electives or Independent Study		
	Select 15 hours of independent study and free electives (chosen under advisement)	15
Total Minimum Credits Required		120
Accelerated B.S. in Mathematics - Mathematics Concentration to M.A. in Mathematics Program		
Students may substitute up to 5 graduate courses for B.S. course requirements, subject to the following guidelines:		
Code	Title	Credits
Major Requirements		
MAT 445	Complex Variables	3
	or MAT 575	Complex Analysis I
Algebra Elective		
May be replaced by one of the following:		
MAT 513	Linear Algebra	
MAT 514	Theory of Numbers	
MAT 515	Algebra I	
MAT 516	Algebra II	
Analysis Elective		
May be replaced by one of the following:		
MAT 535	Topology	
MAT 543	Theory of Differential Equations	
MAT 545	Real Analysis I	
MAT 546	Real Analysis II	
Applied Mathematics Elective		
May be replaced by one of the following:		
STA 505	Mathematical Statistics I ²	

MAT 548	Industrial Mathematics - Continuous Models
MAT 549	
MAT 552	Operations Research
MAT 553	Stochastic Modeling
MAT 554	Scientific Computing
MAT 555	

Mathematics Electives

May be replaced by any course from the three areas above or any of the following:

MAT 521	Discrete Mathematics & Graph Theory
MAT 532	Geometry I
MAT 533	Geometry II
MAT 595	Topics in Mathematics

Free Electives or Independent Study

May be replaced by any course from the four areas above or any other 500-level MAT, MTE, STA, or CSC course.

- ¹ Indicates course satisfies a general education requirement.
- ² Or higher level STA course
- ³ This course fulfills the Capstone requirement and is also a Writing Emphasis and Speaking Emphasis course

All math major courses must be passed with a C or better.

Sample Course Plan

To track their individual degree progress, students are advised to access their Degree Audit via RamPortal regularly. For more information, visit the Degree Audit FAQ webpage (<https://www.wcupa.edu/academicEnterpriseSystems/student-system-modernization/degree-audit-faqs.aspx>).

The following is a sample suggested course sequence for this program; course offerings and availability are not guaranteed. Students should consult their academic advisor with any questions.

Course	Title	Credits
Year One		
Fall		
MAT 161	Calculus I	4
CSC 141	Computer Science I	3
WRT 120	Effective Writing I	3
or	or Effective Writing with Supplemental	
WRT 123	Writing Workshop	
FYE 100X	First Year Experience	4
MAT 125	Introduction to Statistics and Probability (recommended)	3
Credits		17
Spring		
MAT 162	Calculus II	4
MAT 200	The Nature of Mathematics	3
PHY 170	Physics I	4
Behavioral & Social Science Gen Ed		3
Humanities Gen Ed		3
Credits		17
Year Two		
Fall		
MAT 261	Calculus III	4
MAT 311	Linear Algebra	3
PHY 180	Physics II	4

WRT 2XX	200-Level WRT Course	3
Humanities Gen Ed		3

Credits 17

Spring

MAT 343	Differential Equations	3
Mathematics Elective ³		3
Ethics Gen Ed		3
Free Elective (S/W course MAT 401 recommended) ²		3
Free Elective ²		3

Credits 15

Year Three

Fall

MAT 411	Algebra I	3
MAT 421	Mathematical Statistics I	3
Mathematics Elective ³		3
Interdisciplinary Gen Ed		3
Arts Gen Ed		3

Credits 15

Spring

MAT 441	Real Analysis I	3
MAT 480	Capstone in Mathematics	3
SPK 230		
Algebra Elective		3
Diverse Communities Gen Ed		3

Credits 12

Year Four

Fall

MAT 445	Complex Variables	3
ENG 371	Technical Writing	3
Analysis Elective		3
Free Elective ²		3
Free Elective ²		3

Credits 15

Spring

Applied Mathematics Elective		3
Behavioral/Social Science Gen Ed		3
Mathematics Elective ³		3
Free Elective (MAT 499 recommended) ^{1,2}		3

Credits 12

Total Credits 120

- ¹ MAT 499 may be taken for variable credit and repeated for credit.
- ² Must be approved by advisor.
- ³ Any courses in mathematics with course numbers above 311, with the exception of those courses with a primary focus on teacher education or those courses restricted to students majoring in early or middle grades education.