Mathematical Sciences

Bachelor of Science (BS)

For a complete description of the major requirements, please visit the catalog
https://go.gmu.edu/MathPrograms

BS Mathematics Core		
Course	**Name**	**Credits**
Math 125	Discrete Mathematics I	3
Math 113/115	Analytic Geometry and Calculus I	4
Math 114/116	Analytic Geometry and Calculus II	4
Math 203	Linear Algebra	3
Math 213/215	Analytic Geometry and Calculus III	3
Math 214/216	Differential Equations	3
Math 300	Introduction to Advanced Mathematics	3
Math 322	Advanced Linear Algebra	3
Math 400/ Math 401	History of Math/ Mathematics Through 3D Printing	3

Computational Skills		Credits
CS 112	Introduction to Computer Programming	4

Mason Core Requirements	credits
See catalog for details	30

Science (Choose 1 sequence)			
Biology		Chemistry	
Bio	213	Chem	211/213
Bio (pick 1)	300	Chem	212/214
	308		
	311		

Physics		Geology	
PHYS	160/161	Geol	101/103
PHYS	260/261	Geol	102/104

Choose a Concentration!

- Actuarial Sciences
- Applied Math
- Data Science
- Mathematical Statistics
- Pure Math (coming Fall 2023)
- Individualized (coming Fall 2023)

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Concentration Requirements

BS - Pure Math Concentration		credits
Breadth Requirements		
Math 315	Advanced Calculus I	3
Math 321	Abstract Algebra	3
Math 411	Functions of a Complex Variable	3
Pick one		
Math 312	Geometry	3
Math 431	Topology	
Depth Requirements		
Pick two		
Math 312	Geometry	6
Math 316	Advanced Calculus II	
Math 325	Discrete Mathematics	
Math 421	Abstract Algebra II	
Math 431	Topology	
Math 432	Differential Geometry	
Math 433	Algebraic Geometry	
3 credits of additional upper level Math credits		3
A second sequence from Science (2 courses)		4-8
6 more UL credits from Bio, Chem, Physics, Geology		
PHYS 262 & 263		
2 courses from the following: CDS 230, 301 or CS 211, 310, 330, 483		

BS - Actuarial Sciences Concentration		credits
Math 351	Probability	3
Math 352	Statistics	3
Math 551	Regression and Time Series	3
Math 554	Financial Mathematics	3
Math 555	Actuarial Modeling I	3
Math 557	Financial Derivatives	3
Acct 203	Survey of Accounting	3
Econ 103	Contemporary Microeconomic Principles	3
Stat 362	Intro to Computer Statistical Packages	3
Pick one		
Econ 306	Intermediate Microeconomics	3
Econ 310	Money and Banking	
Fnan 321	Financial Institutions	
Pick two		
Math 441	Deterministic Operations Research	3
Math 442	Stochastic Operations Research	
Math 446	Numerical Analysis I	
Math 453	Advanced Mathematical Statistics	

**No additional science requirement for Actuarial Concentration

BS - Applied Mathematics Concentration		credits
Math 315	Advanced Calculus I	3
Math 351	Probability	3
Math 313	Introduction to Applied Analysis	3
Math 413	Modern Applied Mathematics I	3
Math 446	Numerical Analysis I	3
Pick one		
Math 314	Introduction to Applied Mathematics	6
Math 414	Modern Applied Mathematics II	
Math 478	Intro to Partial Differential Equations and Numerical Methods	
3 credits of additional upper level Math credits		3
A second sequence from Science (2 courses)		4-8
6 more UL credits from Bio, Chem, Physics, Geology		
PHYS 262 & 263		
2 courses from the following: CDS 230, 301 or CS 211, 310, 330, 483		

BS - Mathematical Statistics Concentration		credits
Math 315	Advanced Calculus I	3
Math 351	Probability	3
Math 352	Statistics	3
Math 453	Advanced Mathematical Statistics	3
Math 551	Regression and Time Series	3
Stat 362	Intro to Computer Statistical Packages	3
Pick one		
Stat 260	Introduction to Statistical Practice I	3
Stat 350	Introductory Statistics II	
Stat 360	Introduction to Statistical Practice II	
Pick two		
Stat 455	Experimental Design	6
Stat 460	Introduction to Biostatistics	
Stat 462	Applied Multivariate Statistics	
Stat 463	Intro to Exploratory Data Analysis	
Stat 465	Nonparametric Statistics and Catagorical Data Analysis	
Stat 472	Introduction to Statistical Learning	
Stat 474	Introduction to Survey Sampling	
3 more credits UL from Bio, Chem, Physics, Geology		3-4
PHYS 262 & 263		
1 course from the following: CDS 230, 301 or CS 211, 310, 330, 483		

BS - Data Science Concentration		credits
Math 315	Advanced Calculus I	3
Math 351	Probability	3
Math 446	Numerical Analysis I	3
Math 464	Linear Algebra with Data Applications	3
Pick two		
Math 462/463	Mathematics of Machine Learning I & II	6-7
Math 465	Mathematics of Data Science	
Math 447	Numerical Analysis II	
Pick one		
Stat 350	Introductory Statistics II	3
Stat 360	Introduction to Statistical Practice II	
Stat 356	Statistical Theory	
Math 352	Statistics	
Pick one		
CDS 301	Scientific Information and Data Visualization	3
CDS 302	Scientifica Data and Databases	
CS 310	Data Structures	
3 more credits UL from Bio, Chem, Physics, Geology		3-4
PHYS 262 & 263		

BS Individualized Contentration		credits
Math 315	Advanced Calculus I	3
Pick two		
Math 316	Advanced Calculus II	6
Math 321	Abstract Algebra	
Math 421	Abstract Algebra II	
Math 431	Topology	
Math 432	Differential Geometry	
Math 433	Algebraic Geometry	
Math 464	Linear Algebra with Data Applications	
Math 465	Mathematics of Data Science	
12 additional upper-level Math credits		12
A second sequence from Science		4-8
6 more UL credits from Bio, Chem, Physics, Geology		
PHYS 262 & 263		
2 courses from the following: CDS 230, 301 or CS 211, 310, 330, 483		

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Reach out to one of our advisors if you have questions!