

BACHELOR OF SCIENCE IN MATHEMATICS - MATHEMATICAL FOUNDATIONS IN DATA SCIENCE

Code	Title	Credit Hours
Wellness Requirement		
APPH 1040	Scientific Foundations of Health	2
	or APPH 10 The Science of Physical Activity and Health	
	or APPH 10 Flourishing: Strategies for Well-being and Resilience	
Core IMPACTS		
Institutional Priority		
CS 1301	Introduction to Computing	3
Mathematics and Quantitative Skills		
MATH 1552	Integral Calculus	4
Political Science and U.S. History		
HIST 2111	The United States to 1877	3
	or HIST 2111 The United States since 1877	
	or INTA 1200 American Government in Comparative Perspective	
	or POL 1101 Government of the United States	
	or PUBP 3000 American Constitutional Issues	
Arts, Humanities, and Ethics		
Any HUM		6
Communicating in Writing		
ENGL 1101	English Composition I	3
ENGL 1102	English Composition II	3
Technology, Mathematics, and Sciences		
Lab Science		
MATH 1551	Differential Calculus	2
	or MATH 1550 Introduction to Differential Calculus	
MATH 1553	Introduction to Linear Algebra	2
	or MATH 1552 Linear Algebra	
	or MATH 1553 Linear Algebra with Abstract Vector Spaces	
Social Sciences		
Any SS		9
Field of Study		
PHYS 2212	Principles of Physics II	4
CS 1331	Introduction to Object Oriented Programming	3
MATH 2551	Multivariable Calculus	4
	or MATH 2550 Honors Multivariable Calculus	
MATH 2552	Differential Equations	4
	or MATH 2551 Honors Differential Equations	
MATH 2106	Foundations of Mathematical Proof	3
Bridging Courses		
MATH 3012	Applied Combinatorics	3
MATH 3235	Probability Theory	3
MATH 3406	A Second Course in Linear Algebra	3

Upper Level Foundation Courses

MATH 4107	Introduction to Abstract Algebra I ²	3
MATH 4317	Analysis I ²	3
MATH 4320	Complex Analysis ²	3

Mathematical Foundations in Data Science Concentration

MATH 3236	Statistical Theory	3
	or MATH 42 Mathematical Statistics I	
MATH 4210	Mathematical Foundations of Data Science	3
MATH 4640	Numerical Analysis I	3
Select nine credits: ⁷		9

MATH 4022	Introduction to Graph Theory	
MATH 4032	Combinatorial Analysis	
MATH 4221	Stochastic Processes I	
MATH 4222	Stochastic Processes II	
MATH 4255	Monte Carlo Methods	
MATH 4262	Mathematical Statistics II	
MATH 4641	Numerical Analysis II	
MATH 4280	Introduction to Information Theory	
CS 4641	Machine Learning	
CX 4240	Introduction to Computing for Data Analysis	
ISYE 3133	Engineering Optimization	
	or MATH Linear Programming	

Mathematics Elective ⁷	3
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Engineering or Science Electives ⁷

BIOS, CHEM, EAS, PHYS, PSYC, ECON, CS, CX, AE, BMED, CEE, CHBE, ECE, ISYE, MSE, ME 3000-level or higher courses ^{4,5}	9
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Free Electives

Free Electives ⁶	11
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Total Credit Hours	122
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Pass-fail only allowed for Free Electives.

Four courses from Group A list must be completed. Student may select MATH elective from Group B if four courses from Group A are complete, otherwise, the Math elective must come from Group A. If student does not complete four courses from Group A list from concentration requirements and MATH elective, then the course(s) must be completed for free electives.

Group A list: MATH 3236, MATH 4022, MATH 4032, MATH 4108, MATH 4150, MATH 4210, MATH 4221, MATH 4261, MATH 4318, MATH 4347, MATH 4431, MATH 4432, MATH 4441, MATH 4541, MATH 4640.

Group B list: MATH 4080/MATH 4090, MATH 4222, MATH 4255, MATH 4262, MATH 4280, MATH 4348, MATH 4542, MATH 4580, MATH 4581, MATH 4641, MATH 4699, MATH 4755, MATH 4777, MATH 4782, MATH 4801, MATH 4802, CS 3510/CS 3511, CS 4510, CS 4540, CS 4641, CX 4140, CX 4240, ISYE 3133, ISYE 4133.

¹ If PHYS 2231 is taken, extra hour goes toward Free Electives

² C-minimum required

³ MATH 4699 must be an approved topic related to concentration and can be used once

⁴ CEE 3770, ISYE 3770, CS 4001, and CS 4002 are not allowed to be used here.

⁵ Two courses must be from the same school.

⁶ MATH 1113, MATH 11X3, MATH 3670 CEE 3770, and ISYE 3770 are restricted from free electives.

⁷ These hours may share with a minor.