

MATHEMATICS MAJOR (B.S.)

<https://ceps.unh.edu/mathematics-statistics/mathematics-bs>

Description

This program offers the strongest concentration in mathematics, requiring courses that are intended to prepare the student for graduate work in mathematics. Through a judicious choice of electives, students may design stronger pre-graduate programs, a program in applied mathematics, or slant the program toward a career in business or industry.

Graduation Requirements

In all courses used to satisfy the requirements for its major programs, the Department of Mathematics and Statistics requires that a student earn a grade of C- or better and have an overall grade-point average of at least 2.00 in these courses.

Requirements

Code	Title	Credits
Required MATH Courses		
MATH 425	Calculus I	4
MATH 426	Calculus II	4
MATH 445	Mathematics and Applications with MATLAB	4
or CS 410P	Introduction to Scientific Programming/Python	
or CS 410C	Introduction to Scientific Programming/C	
MATH 527	Differential Equations with Linear Algebra ¹	4
MATH 528	Multidimensional Calculus ¹	4
MATH 531	Mathematical Proof	4
MATH 539	Introduction to Statistical Analysis	4
MATH 545	Introduction to Linear Algebra ¹	4
or MATH 645	Linear Algebra for Applications	
MATH 761	Abstract Algebra	4
MATH 763	Abstract Algebra II	4
MATH 767	One-Dimensional Real Analysis	4
MATH 784	Topology	4
MATH 788	Complex Analysis	4
MATH elective, selected in consultation with the academic advisor		4
Select TWO of the following electives		
MATH 760	Geometry	
MATH 765	Introduction to Commutative Algebra and Algebraic Geometry	
MATH 768	Real Analysis II	
MATH 769	Introduction to Differential Geometry	
MATH 770	Foundations of Number Theory	
MATH 772	Combinatorics	
Capstone: Select one of the following		
MATH 797	Senior Seminar	4
MATH 799	Senior Thesis	2 or 4
Other Required Courses		
PHYS 407	General Physics I	4
PHYS 408	General Physics II	4
Total Credits		78-80

¹ MATH 525 Linearity I may be substituted for MATH 645.
MATH 525 & MATH 526, Linearity, may be substituted for MATH 527, MATH 528, and MATH 645.

Degree Plan

Course	Title	Credits
First Year		
Fall		
MATH 425	Calculus I	4
Discovery Course		4
Discovery Course		4
Discovery Course		4
MATH 400	Freshman Seminar	1
Credits		17
Spring		
MATH 426	Calculus II	4
MATH 445	Mathematics and Applications with MATLAB	4
or CS 410P	or Introduction to Scientific Programming/Python	
or CS 410C	or Introduction to Scientific Programming/C	
ENGL 401	First-Year Writing	4
Inquiry Course		4
Credits		16
Second Year		
Fall		
MATH 528	Multidimensional Calculus	4
MATH 539	Introduction to Statistical Analysis	4
Discovery Course		4
PHYS 407	General Physics I	4
Credits		16
Spring		
MATH 527	Differential Equations with Linear Algebra	4
MATH 531	Mathematical Proof	4
Discovery Course		4
PHYS 408	General Physics II	4
Credits		16
Third Year		
Fall		
MATH 545	Introduction to Linear Algebra	4
or MATH 645	or Linear Algebra for Applications	
MATH 761	Abstract Algebra	4
MATH Elective Course		4
Discovery Course		4
Credits		16
Spring		
MATH 763	Abstract Algebra II	4
MATH 767	One-Dimensional Real Analysis	4
MATH Elective Course		4
Discovery Course		4
Credits		16
Fourth Year		
Fall		
MATH 784	Topology	4

MATH Elective Course	4
Elective Course	4
Elective Course	4
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Credits	16
Spring	
MATH 788 Complex Analysis	4
MATH Elective Course	4
Elective Course	4
Elective Course	4
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Credits	16
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Total Credits	129

Student Learning Outcomes

- Students can explain core concepts from a range of different branches of mathematics, including analysis, algebra, calculus and statistics.
- Students can correctly interpret mathematical definitions and construct simple proofs which use definitions and logical arguments to establish properties of mathematical objects.
- Students are aware that mathematical objects may have multiple representations and are able to select representations which clarify problems and simplify calculations.
- Students can recognize valid and invalid mathematical arguments.