

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.

Requirements

Degree Requirements

Minimum Credit Requirement: 128 credits

Minimum Residency Requirement: 32 credits must be taken at UNH

Minimum GPA: 2.0 required for conferral*

Core Curriculum Required: Discovery & Writing Program Requirements

Foreign Language Requirement: No

All Major, Option and Elective Requirements as indicated.

*Major GPA requirements as indicated.

Major 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.

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	4
MATH 765	Introduction to Commutative Algebra and Algebraic Geometry	4
MATH 768	Real Analysis II	4
MATH 769	Introduction to Differential Geometry	4
MATH 770	Foundations of Number Theory	4
MATH 772	Combinatorics	4

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 The full Linearity sequence, MATH 525 and MATH 526, may be used to replace the MATH 527, MATH 528, and MATH 545 / MATH 645 requirements.
MATH 525 may be used to replace the MATH 545 or MATH 645 requirement.

Degree Plan

First Year

Fall	Credits
MATH 425 Calculus I	4
Discovery Course	4
Discovery Course	4
Inquiry Course	4
MATH 400 Freshman Seminar	1
Credits	17
Spring	
MATH 426 Calculus II	4
MATH 445 Mathematics and Applications with or CS 410P MATLAB or CS 410C or Introduction to Scientific Programming/Python or Introduction to Scientific Programming/C	4
ENGL 401 First-Year Writing	4
Discovery Course	4
Credits	16

Second Year

Fall	Credits
MATH 528 Multidimensional Calculus	4
MATH 539 Introduction to Statistical Analysis	4
PHYS 407 General Physics I	4
Discovery Course	4
Credits	16
Spring	
MATH 527 Differential Equations with Linear Algebra	4
MATH 531 Mathematical Proof	4
PHYS 408 General Physics II	4
Discovery Course	4
Credits	16

Third Year

Fall	Credits
MATH 545 Introduction to Linear Algebra or MATH 645 or Linear Algebra for Applications	4
MATH 761 Abstract Algebra	4
Discovery Course	4

Writing Intensive Course		4
Credits		16
Spring		
MATH 763	Abstract Algebra II	4
MATH 767	One-Dimensional Real Analysis	4
Writing Intensive Course		4
MATH Elective Course		4
Credits		16
Fourth Year		
Fall		
MATH 784	Topology	4
MATH 797	Senior Seminar	4
or MATH 799	or Senior Thesis	
MATH Elective Course		4
Elective Course		4
Credits		16
Spring		
MATH 788	Complex Analysis	4
MATH Elective Course		4
Elective Course		4
Elective Course		4
Credits		16
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.