

# 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
<b>Required MATH Courses</b>		
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 <sup>1</sup>	4
MATH 528	Multidimensional Calculus <sup>1</sup>	4
MATH 531	Mathematical Proof	4
MATH 539	Introduction to Statistical Analysis	4
MATH 545	Introduction to Linear Algebra <sup>1</sup>	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
<b>Select TWO of the following electives</b>		
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
<b>Other Required Courses</b>		
PHYS 407	General Physics I	4
PHYS 408	General Physics II	4
<b>Total Credits</b>		<b>78-80</b>

<sup>1</sup> 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
<b>Credits</b>		<b>17</b>
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
Discovery Course		4
<b>Credits</b>		<b>16</b>

### Second Year

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

### Third Year

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

Writing Intensive Course	4
<b>Credits</b>	<b>16</b>
<b>Spring</b>	
MATH 763      Abstract Algebra II	4
MATH 767      One-Dimensional Real Analysis	4
Writing Intensive Course	4
MATH Elective Course	4
<b>Credits</b>	<b>16</b>
<b>Fourth Year</b>	
<b>Fall</b>	
MATH 784      Topology	4
MATH 797      Senior Seminar	4
or MATH 799      or Senior Thesis	
MATH Elective Course	4
Elective Course	4
<b>Credits</b>	<b>16</b>
<b>Spring</b>	
MATH 788      Complex Analysis	4
MATH Elective Course	4
Elective Course	4
Elective Course	4
<b>Credits</b>	<b>16</b>
<b>Total Credits</b>	<b>129</b>

## 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.