

APPLIED MATHEMATICS MAJOR (B.S.)

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

Description

This degree prepares students for careers in science, engineering, and industry by giving students broad exposure to both theoretical and computational models of physical systems in the physical, natural, and social sciences.

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 Courses		
MATH 425	Calculus I	4
MATH 426	Calculus II	4
MATH 445 or IAM 550	Mathematics and Applications with MATLAB Introduction to Engineering Computing	4
MATH 527	Differential Equations with Linear Algebra ¹	4
MATH 528	Multidimensional Calculus ¹	4
MATH 531	Mathematical Proof	4
MATH 545 or MATH 645	Introduction to Linear Algebra ² Linear Algebra for Applications	4
MATH 644	Statistics for Engineers and Scientists	4
MATH 647 or MATH 788	Complex Analysis for Applications Complex Analysis	4
MATH 745	Foundations of Applied Mathematics I	4
MATH 753	Introduction to Numerical Methods I	4
MATH 757	Mathematical Optimization for Applications	4
PHYS 407	General Physics I	4
PHYS 408	General Physics II	4
CS 415 & CS 416	Introduction to Computer Science I and Introduction to Computer Science II	8
Capstone		
Select one course from the following: 4		
MATH 797	Senior Seminar	
MATH 798	Senior Project	
MATH 799	Senior Thesis	

Electives		
Select one (1) approved 700-level CEPS course in consultation with academic advisor		4
Select two courses from the following: 8		
MATH #746	Foundations of Applied Mathematics II	
MATH 747	Introduction to Nonlinear Dynamics and Chaos	
MATH 767	One-Dimensional Real Analysis	
Total Credits		80

¹ The full Linearity sequence, MATH 525 & MATH 526, may be used to replace the MATH 527, MATH 528, and MATH 545 / MATH 645 requirements.

² MATH 525 may be used to replace the MATH 545 or MATH 645 requirement.

Degree Plan

Sample Degree Plan

First Year		
Fall		Credits
MATH 425	Calculus I	4
CS 415	Introduction to Computer Science I	4
Discovery Course		4
Inquiry Course		4
MATH 400	Freshman Seminar	1
Credits		17
Spring		
MATH 426	Calculus II	4
MATH 445 or IAM 550	Mathematics and Applications with MATLAB or Introduction to Engineering Computing	4
CS 416	Introduction to Computer Science II	4
ENGL 401	First-Year Writing	4
Credits		16
Second Year		
Fall		
MATH 527	Differential Equations with Linear Algebra	4
PHYS 407	General Physics I	4
Discovery Course		4
Discovery Course		4
Credits		16
Spring		
MATH 528	Multidimensional Calculus	4
MATH 531	Mathematical Proof	4
PHYS 408	General Physics II	4
Discovery Course		4
Credits		16
Third Year		
Fall		
MATH 545 or MATH 645	Introduction to Linear Algebra or Linear Algebra for Applications	4
MATH 644	Statistics for Engineers and Scientists	4
MATH 753	Introduction to Numerical Methods I	4

Discovery Course		4
Credits		16
Spring		
MATH 757	Mathematical Optimization for Applications	4
CEPS 700-level elective		4
Discovery Course		4
Elective		4
Credits		16
Fourth Year		
Fall		
MATH 745	Foundations of Applied Mathematics I	4
Writing Intensive Course		4
Elective		4
Elective		4
Credits		16
Spring		
MATH 647 or MATH 788	Complex Analysis for Applications or Complex Analysis	4
MATH 797 or MATH 798 or MATH 799	Senior Seminar or Senior Project or Senior Thesis	4
Writing Intensive Course		4
Elective		4
Credits		16
Total Credits		129

Student Learning Outcomes

- Students recognize common mathematical notations and operations used in mathematics, science and engineering.
- Students can recognize and classify a variety of mathematical models including differential equations, linear and nonlinear systems of algebraic equations, and common probability distributions.
- Students have developed a working knowledge (including notation, terminology, foundational principles of the discipline, and standard mathematical models within the discipline) in at least one discipline outside of mathematics.
- Students are able to extract useful knowledge, both quantitative and qualitative, from mathematical models and can apply that knowledge to the relevant discipline.