APPLIED MATHEMATICS
MAJOR: COMPUTATION OPTION (B.S.)

https://ceps.unh.edu/mathematics-statistics/program/be/applied-mathematics-computation-option

Description

This degree program prepares students for employment and/or graduate study in a variety of fields and research specializations in which mathematics plays a critical role in the solution of important scientific and technological problems.

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
--- | --- | ---
MATH 425 | Calculus I | 4
MATH 426 | Calculus II | 4
MATH 445 | Mathematics and Applications with MATLAB | 4
or IAM 550 | Introduction to Engineering Computing | 4
MATH 527 | Differential Equations with Linear Algebra | 4
MATH 528 | Multidimensional Calculus | 4
MATH 531 | Mathematical Proof | 4
MATH 644 | Statistics for Engineers and Scientists | 4
MATH 645 | Linear Algebra for Applications | 4
MATH 753 | Introduction to Numerical Methods | 4
PHYS 407 | General Physics I | 4

Capstone: Select one of the following

MATH 797 | Senior Seminar | 4
MATH 798 | Senior Project | 4
MATH 799 | Senior Thesis | 2 or 4

Total Credits: 50-52

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

2 Applied Mathematics: Economics Option students must take MATH 539 Introduction to Statistical Analysis.

Computation Option Requirements

Code | Title | Credits
--- | --- | ---
PHYS 408 | General Physics II | 4
MATH 647 | Complex Analysis for Applications | 4
MATH 745 | Foundations of Applied Mathematics I | 4
CS 415 | Introduction to Computer Science I | 8
CS 416 | and Introduction to Computer Science II | 4
CS 420 | Foundations of Programming for Digital Systems | 4
CS 515 | Data Structures and Introduction to Algorithms | 4
CS 659 | Introduction to the Theory of Computation | 4
CS 758 | Algorithms | 4
IAM 751 | Introduction to High-Performance Computing | 4

Total Credits: 40

Degree Plan

First Year

Fall

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 528 | Multidimensional Calculus | 4
MATH 531 | Mathematical Proof | 4
PHYS 407 | General Physics I | 4
CS 420 | Foundations of Programming for Digital Systems | 4

Credits: 16

Spring

MATH 527 | Differential Equations with Linear Algebra | 4
MATH 644 | Statistics for Engineers and Scientists | 4
PHYS 408 | General Physics II | 4
CS 515 | Data Structures and Introduction to Algorithms | 4

Credits: 16

Third Year

Fall

MATH 647 | Complex Analysis for Applications | 4
MATH 753 | Introduction to Numerical Methods I | 4
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<tbody>
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<td>CS 659</td>
<td>Introduction to the Theory of Computation</td>
<td>4</td>
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<td>Discovery Course</td>
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**Fourth Year**

**Fall**

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<td>Elective Course</td>
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**Total Credits** 129

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**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.