APPLIED MATHEMATICS
MAJOR (B.S.)

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.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 425</td>
<td>Calculus I</td>
<td>4</td>
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<tr>
<td>MATH 426</td>
<td>Calculus II</td>
<td>4</td>
</tr>
<tr>
<td>MATH 445</td>
<td>Mathematics and Applications with MATLAB</td>
<td>4</td>
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<tr>
<td>or IAM 550</td>
<td>Introduction to Engineering Computing</td>
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<tr>
<td>MATH 527</td>
<td>Differential Equations with Linear Algebra 1</td>
<td>4</td>
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<tr>
<td>MATH 528</td>
<td>Multidimensional Calculus 1</td>
<td>4</td>
</tr>
<tr>
<td>MATH 531</td>
<td>Mathematical Proof</td>
<td>4</td>
</tr>
<tr>
<td>MATH 545</td>
<td>Introduction to Linear Algebra 2</td>
<td>4</td>
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<tr>
<td>or MATH 645</td>
<td>Linear Algebra for Applications</td>
<td></td>
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<tr>
<td>MATH 644</td>
<td>Statistics for Engineers and Scientists</td>
<td>4</td>
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<tr>
<td>MATH 647</td>
<td>Complex Analysis for Applications</td>
<td>4</td>
</tr>
<tr>
<td>or MATH 788</td>
<td>Complex Analysis</td>
<td></td>
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<tr>
<td>MATH 745</td>
<td>Foundations of Applied Mathematics I</td>
<td>4</td>
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<tr>
<td>MATH 753</td>
<td>Introduction to Numerical Methods I</td>
<td>4</td>
</tr>
<tr>
<td>MATH 757</td>
<td>Mathematical Optimization for Applications</td>
<td>4</td>
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<tr>
<td>Capstone: Select one of the following</td>
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<tr>
<td>MATH 797</td>
<td>Senior Seminar</td>
<td>4</td>
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<tr>
<td>MATH 798</td>
<td>Senior Project</td>
<td>4</td>
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<tr>
<td>MATH 799</td>
<td>Senior Thesis</td>
<td>2 or 4</td>
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</table>

Select TWO of the following electives

- MATH 746 | Foundations of Applied Mathematics II        | 4       |
- MATH 747 | Introduction to Nonlinear Dynamics and Chaos | 4       |
- MATH 757 | One-Dimensional Real Analysis                | 4       |

One approved CEPS course at the 700-level, selected in consultation with the academic advisor

Other Required Courses

- PHYS 407 | General Physics I                            | 4       |

Degree Plan

Total Credits 90-92

The full Linearity sequence, MATH 525 & 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.
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  4
or Complex Analysis
MATH 797  or MATH 798  or MATH 799  Senior Seminar  4
or Senior Project
or Senior Thesis
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.