MATHEMATICS MAJOR (B.S.)

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.

Degree Plan

First Year

Fall

MATH 425  Calculus I  4
Discovery Course  4
Discovery Course  4
MATH 400  Freshman Seminar  1
Credits  17

Spring

MATH 426  Calculus II  4
MATH 445  or CS 410P  Mathematics and Applications with MATLAB  4
or CS 410C  or Introduction to Scientific Programming/Python
MATH 527  Differential Equations with Linear Algebra  4
MATH 528  Multidimensional Calculus  4
MATH 531  Mathematical Proof  4
MATH 539  Introduction to Statistical Analysis  4
MATH 545  or MATH 645  Introduction to Linear Algebra  4
or Linear Algebra for Applications
MATH 645  Abstract Algebra  4
MATH 761  One-Dimensional Real Analysis  4
MATH 784  Topology  4
MATH 788  Complex Analysis  4
PHYS 407  General Physics I  4
PHYS 408  General Physics II  4
ENGL 401  First-Year Writing  4
Discovery Course  4
Credits  16

Second Year

Fall

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

MATH 545  or MATH 645  Introduction to Linear Algebra  4
or Linear Algebra for Applications
MATH 761  Abstract Algebra  4
Discovery Course  4
Credits  16

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.
Mathematics Major (B.S.)

<table>
<thead>
<tr>
<th>Writing Intensive Course</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Credits</strong></td>
<td><strong>16</strong></td>
</tr>
</tbody>
</table>

**Spring**

<table>
<thead>
<tr>
<th>MATH 763</th>
<th>Abstract Algebra II</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 767</td>
<td>One-Dimensional Real Analysis</td>
<td>4</td>
</tr>
<tr>
<td>Writing Intensive Course</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>MATH Elective Course</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

| **Credits**                       | **16** |

**Fourth Year**

**Fall**

<table>
<thead>
<tr>
<th>MATH 784</th>
<th>Topology</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 797</td>
<td>Senior Seminar</td>
<td>4</td>
</tr>
<tr>
<td>or MATH 799</td>
<td>Senior Thesis</td>
<td></td>
</tr>
<tr>
<td>MATH Elective Course</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Elective Course</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

| **Credits**                       | **16** |

**Spring**

<table>
<thead>
<tr>
<th>MATH 788</th>
<th>Complex Analysis</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH Elective Course</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Elective Course</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

| **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.