MATHEMATICS EDUCATION MAJOR: SECONDARY EDUCATION OPTION (B.S.)

https://ceps.unh.edu/mathematics-statistics/program/bs/mathematics-education-secondary-education-option

Description

This professional degree program prepares students for teaching mathematics at the secondary level. The program is coordinated with the education department’s teacher certification programs. Students may complete the degree requirements for the secondary option with full teacher certification in either four or five years.

Students electing the four-year option leading to secondary school certification must plan for one semester of student teaching (EDUC 694C Supervised Teaching/Mathematics) in their senior year; this requires careful planning with your program adviser to accommodate the scheduling of required MATH courses. Requirements for admission to student teaching include receiving credit for EDUC 500 and a minimum cumulative 2.8 GPA.

The five-year program includes a year-long teaching internship in the fifth year. The internship requires admission into a UNH Department of Education graduate program that leads to certification. See Education, College of Liberal Arts.

Graduation 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.

For teacher licensure a grade of B- or better is required in all Education courses.

Requirements

<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>
</tr>
<tr>
<td>MATH 426</td>
<td>Calculus II</td>
<td>4</td>
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<tr>
<td>MATH 445</td>
<td>Mathematics and Applications with MATLAB or CS 410P</td>
<td>4</td>
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<tr>
<td></td>
<td>or CS 410C Introduction to Scientific Programming/Python or Introduction to Scientific Programming/C</td>
<td>4</td>
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<tr>
<td>MATH 527</td>
<td>Differential Equations with Linear Algebra</td>
<td>4</td>
</tr>
<tr>
<td>MATH 528</td>
<td>Multidimensional Calculus</td>
<td>4</td>
</tr>
<tr>
<td>MATH 531</td>
<td>Mathematical Proof</td>
<td>4</td>
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<tr>
<td>MATH 539</td>
<td>Introduction to Statistical Analysis</td>
<td>4</td>
</tr>
<tr>
<td>MATH 545</td>
<td>Introduction to Linear Algebra</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>or MATH 645 Linear Algebra for Applications</td>
<td>4</td>
</tr>
<tr>
<td>MATH 624</td>
<td>Analysis of Secondary School Mathematics</td>
<td>4</td>
</tr>
<tr>
<td>MATH 700</td>
<td>Introduction to Mathematics Education</td>
<td>4</td>
</tr>
<tr>
<td>MATH 709</td>
<td>Teaching of Mathematics in Grades 6-12</td>
<td>4</td>
</tr>
<tr>
<td>MATH 760</td>
<td>Geometry</td>
<td>4</td>
</tr>
<tr>
<td>MATH 761</td>
<td>Abstract Algebra</td>
<td>4</td>
</tr>
<tr>
<td>MATH 790</td>
<td>Historical Foundations of Mathematics</td>
<td>4</td>
</tr>
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<td></td>
<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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</tbody>
</table>

Other Required Courses

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<tr>
<th>Code</th>
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<tbody>
<tr>
<td>EDUC 500</td>
<td>Exploring Teaching</td>
<td>4</td>
</tr>
<tr>
<td>EDUC 605</td>
<td>Educational Perspectives in Critical Times</td>
<td>4</td>
</tr>
<tr>
<td>EDUC 701</td>
<td>Human Development &amp; Learning: Cultural Perspectives</td>
<td>4</td>
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</tbody>
</table>

Total Credits 74-76

Note: EDUC 751B Methods of Inclusive Secondary Education: Literacies, Learning, and Transitions is a requirement for certification and may be taken as an undergraduate.

Degree Plan

Course | Title                                      | Credits |
|-------|--------------------------------------------|---------|

First Year

**Fall**

MATH 425 | Calculus I                                 | 4       |
ENGL 401 | First-Year Writing                         | 4       |
Discovery Course                       | 4       |
Inquiry 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 or Introduction to Scientific Programming/Python or Introduction to Scientific Programming/C | 4       |
Discovery Course                           | 4       |
Discovery Course                           | 4       |

**Credits** 16

Second Year

**Fall**

MATH 528 | Multidimensional Calculus                  | 4       |
MATH 531 | Mathematical Proof                         | 4       |
EDUC 500 | Exploring Teaching                         | 4       |
Discovery Course                           | 4       |

**Credits** 16

**Spring**

MATH 527 | Differential Equations with Linear Algebra | 4       |
MATH 545 or MATH 645 | Introduction to Linear Algebra or Linear Algebra for Applications | 4       |
MATH 790 | Historical Foundations of Mathematics      | 4       |
Discovery Course                           | 4       |

**Credits** 16

Third Year

**Fall**

MATH 539 | Introduction to Statistical Analysis       | 4       |
MATH 700 | Introduction to Mathematics Education      | 4       |
MATH 760 | Geometry                                   | 4       |
Discovery Course                           | 4       |

**Credits** 16
Spring
MATH 709  Teaching of Mathematics in Grades 6-12  4
MATH 761  Abstract Algebra  4
Discovery Course  4
Writing Intensive Course  4
Credits  16

Fourth Year
Fall
MATH 797  Senior Seminar  4
or MATH 799  Senior Thesis  4
EDUC 605  Educational Perspectives in Critical Times  4
Writing Intensive Course  4
Elective Course  3
Credits  15

Spring
MATH 624  Analysis of Secondary School Mathematics  4
EDUC 701  Human Development & Learning: Cultural Perspectives  4
Elective Course  4
Elective Course  4
Credits  16

Total Credits  128

Student Learning Outcomes

Mathematics Concepts, Practices, and Curriculum. Well-prepared beginning teachers of mathematics:

- Demonstrate robust knowledge of mathematical and statistical concepts that underlie what they encounter in teaching of K-8 or secondary mathematics.
- Engage in appropriate mathematical and statistical practices, and use technological tools to solve mathematical problems, and incorporate educational technology in their teaching.
- Analyze and interpret mathematical curricula, assessments, and standards documents.
- Analyze and interpret students’ mathematical work.

Pedagogical Knowledge and Practices for Teaching Mathematics. Well-prepared beginning teachers of mathematics:

- Demonstrate strong foundations of pedagogical knowledge, and effective and equitable mathematics teaching practices.
- Construct instructional explanations, develop tasks, lesson plans and unit plans, that advance students’ mathematical understanding.
- Recognize common patterns of student thinking related to particular mathematical topics, and articulate ways of supporting students’ mathematical thinking.

Productive dispositions. Well-prepared beginning teachers:

- Demonstrate positive and productive dispositions toward mathematics as a discipline, towards students as learners of mathematics and towards teaching mathematics in ways that support students’ sense making, understanding, and reasoning.