MATHEMATICS, MAT

Department of Mathematics, College of Arts & Sciences

Vision Statement
The Master of Arts for Teachers of Mathematics degree is ideal for:

• Current high school teachers who are planning on teaching advanced secondary mathematics such as Dual-Enrollment calculus at their high school.
• Any student interested in teaching freshman/sophomore level mathematics courses at local universities.
• Any student interested in pursuing a PhD in education with an emphasis in mathematics.

NOTE: This program does not help a student get a state certification to teach high school math. For those students with an undergraduate degrees already interested in pursuing a degree to teach high school math, but do not yet have a state certification to teach, consider the Teacher Academy Project (http://www.unomaha.edu/college-of-education/moec/projects/teacher-academy-project/).

Program Contact Information
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michaelmatthews@unomaha.edu

Program Website (http://www.unomaha.edu/college-of-arts-and-sciences/mathematics/)

Other Program-Related Information

Graduate Assistantships
The Department of Mathematics annually awards a few graduate assistantships for work within the department. These positions pay an annual stipend plus a waiver of tuition. For the details of the nature of the work, please contact the department chair.

Teachers of Mathematics Scholarship
The Teacher of Mathematics Scholarship is awarded to teachers of high school mathematics who are interested in obtaining a graduate degree in mathematics (MS, MA, or MAT) at UNO for the purpose of becoming eligible to teach UNO calculus dual enrollment courses. These scholarships are awarded to teachers in school districts that are participating in the Dual Enrollment program. They will provide for the reimbursement of resident tuition for up to six graduate credit hours per semester for one year. No scholarship award becomes final until UNO graduate admission status is obtained. Continuation beyond the first year depends upon satisfactory academic progress and funds available. For further information contact Dr. Janice Rech.

Admissions

Application Deadlines (Spring 2021, Summer 2021, and Fall 2021)
Applications for this program are accepted on a rolling basis. All materials must be submitted prior to the beginning of the semester in which the student has elected to begin coursework.

Program-Specific Requirements

• Have obtained at least a “B” (3.0 on a 4.0 scale) average in previous mathematics courses, including two courses beyond elementary calculus.
• Hold state certification for teaching secondary school mathematics.

Degree Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Required Courses</td>
<td></td>
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<tr>
<td>Complete the Mathematics for Teachers sequence:</td>
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<tr>
<td>MTCH 8020</td>
<td>MATHEMATICAL MODELING FOR SECONDARY TEACHERS</td>
<td>3</td>
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<tr>
<td>MTCH 8030</td>
<td>ALGEBRA FOR ALGEBRA TEACHERS</td>
<td>3</td>
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<tr>
<td>MTCH 8040</td>
<td>TOPICS IN MATHEMATICAL COMPUTING</td>
<td>3</td>
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<tr>
<td>Education Courses</td>
<td></td>
<td></td>
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<tr>
<td>Graduate only courses TED 8xx0 to be selected in consultation with your advisor</td>
<td>9</td>
<td></td>
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<tr>
<td>Mathematical Sequences</td>
<td></td>
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<tr>
<td>Complete two advisor approved Mathematics (not MTCH) sequences of courses (total of 18 hours). Each sequence must consist of 3 connected courses (as defined by the MAT advisors).</td>
<td>18</td>
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<tr>
<td>Total Credits</td>
<td>36</td>
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</table>

1 For example: Applied Modern Algebra, Algebra 1, and Algebra 2. If one of the courses has been taken previously as an undergraduate the course will not count toward the 36 credits, however it will count in terms of completed the three course sequence. Such a situation would in effect enable the MAT student to finish the 3 course sequence quicker and free up 1 class for an elective in mathematics.

Exit Requirements

• Comprehensive Examination
  • Pass the Mathematics comprehensive examination. The examination is offered three times a year; on April 15, July 15, and November 15th (or the proceeding Friday if any of these dates falls on a weekend). The Mathematics exam is three hours in length and covers the terminal course of each of the 2 Math sequence of courses. Each course instructor will write a 1.5 hour exam and grade the exam as pass or fail. To pass the overall MAT mathematics portion comprehensive exam, the student must pass both.

MTCH 8010 STATISTICAL RESEARCH FOR MATHEMATICS TEACHERS (3 credits)
This course is designed for graduate students in the MAT program who select the statistics option to complete their degree. The student will do a literature review, design a study involving mathematics education, gather and analyze the data, and prepare a manuscript for submission to a refereed journal. (The course will not count toward a major in the MA or MS program.) To prepare for the course, interested students should contact the instructor of the course several months before (8 is the norm) to have time to do the groundwork for the study.
Prerequisite(s)/Corequisite(s): STAT 8015 and TED 8010.

MTCH 8020 MATHEMATICAL MODELING FOR SECONDARY TEACHERS (3 credits)
This course will examine the mathematics underlying several problem situations found in a variety of societal settings. Mathematical models of problems in current literature will be examined and other models will be constructed based on data collected through course activities. Topics relevant to these problems will include function analysis, algebra, geometry, trigonometry and probability and statistics. The role of mathematics in society will be evidenced as problems considered will be timely and sources utilized will include original documentation whenever possible (i.e. recent research reports, government reports and publications).
MTCH 8030 ALGEBRA FOR ALGEBRA TEACHERS (3 credits)
This course will use study interesting mathematical systems related to key algebraic ideas and study habits of mind that are key to effective problem solving. The properties about numbers and operations discovered will connect to the same properties taught in school algebraic course. Special attention will be paid to linear, quadratic, exponential, and logarithmic, polynomial functions in connection to their importance in school algebra.
Prerequisite(s)/Corequisite(s): Admission to the Graduate Program

MTCH 8040 TOPICS IN MATHEMATICAL COMPUTING (3 credits)
This course focuses on the current state-of-the-art technology that is either designed for or is uniquely suitable for teaching mathematics. (Cross-listed with STEM 8040)
Prerequisite(s)/Corequisite(s): MATH 2200 or equivalent or approval of instructor.

MTCH 8806 MATHEMATICS EDUCATION CAPSTONE (3 credits)
This capstone course for preservice and inservice teachers is intended to help connect the undergraduate mathematics curriculum to the secondary mathematics curriculum. Course topics include functions, equations, algebraic structures, congruence, trigonometry, and calculus. Topics are explored via strategies useful for studying mathematics called concept analysis and problem analysis. (Cross-listed with MTCH 4800).
Prerequisite(s)/Corequisite(s): MATH 4030 with a C or better or MATH 3640 with a C or better.