Objective of Mathematics MS: Foundations of Advanced Studies (Option E)

This option is designed to prepare students for advanced-level graduate programs. It is structured so that students with basic preparation from their undergraduate institutions can complete the option in no more than two years. Some students with a higher level of preparation may transfer up to 12 graduate credits from the courses they completed previously; such students may advance more quickly through the program and complete the degree in only one year.

Overview of Mathematical Sciences Department MS programs

The Department of Mathematical Sciences offers graduate programs in study in mathematics with specializations in the fields of algebra, analysis, topology, applied mathematics, probability and statistics, actuarial science, industrial mathematics, and atmospheric science.

The programs of study at the master's level are designed to suit both the student intending to continue toward a PhD as well as the student who wishes to begin a professional career upon completion of the master's program.

The student may prepare for a career in teaching at the secondary or college level and for a career in research in the academic, industrial, government, or business communities.

Five options for the master's degree are offered: the standard mathematics option (A), the industrial mathematics option (B), the statistics option (C), the actuarial science option (D), and the foundations of advanced studies option (E). Students who plan to continue for a PhD degree with a focus on mathematics/statistics should elect an option from options A, B, C, and E, or the dual master's degree option. The department also offers a master's degree in atmospheric science.

Dual Master's Degree Option

In addition to multiple options available for MS in mathematics, the Department of Mathematical Sciences at UWM and the Department of Technomathematics of Fachhochschule Aachen (FHA), Germany have recently created a Dual Master's Degree Program in Mathematics. The students enrolled in this program will be able to earn Master's degrees from both institutions upon completion of the common course requirements.

The program is designed in such a way that students typically will be able to complete all the course requirements within a two-year time period (one year at each institution). Within this program students can choose courses that will allow them to concentrate in the areas of Statistics, Numerical Analysis or General Mathematics. Complete information on the admission policy and graduation requirements, including sample schedules, is available at the Department of Mathematical Sciences web page http://uwm.edu/math/graduate/.

Admission Requirements

Application Deadlines

Application deadlines vary by program, please review the application deadline chart (http://uwm.edu/graduateschool/program-deadlines/) for specific programs. Other important dates and deadlines can be found by using the One Stop calendars (https://uwm.edu/onestop/dates-and-deadlines/).

Admission

An applicant must meet Graduate School requirements plus these departmental requirements to be considered for admission to the program:

1. Completion of three semesters of undergraduate calculus.
2. At least 18 credits of acceptable undergraduate preparation beyond calculus, including at least 3 credits of Linear Algebra (MATH 535 or equivalent) and at least 3 credits of Advanced Calculus (MATH 521 or equivalent).

Applicants who intend to be admitted with specific program-defined course deficiencies should consider the Standard Math Option instead.

Credits and Courses

Minimum degree requirement is 30 credits from mathematics/statistics courses, including

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>MATH 621 &amp; MATH 622</td>
<td>Introduction to Analysis I and Introduction to Analysis II</td>
<td>6</td>
</tr>
<tr>
<td>MATH 631 &amp; MATH 632</td>
<td>Modern Algebra I and Modern Algebra II</td>
<td>6</td>
</tr>
<tr>
<td>At least 12 credits must be taken in courses numbered 700 or above.</td>
<td>12</td>
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<tr>
<td>Up to 6 credits may be in approved courses from outside the Department.</td>
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<td></td>
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<tr>
<td>Total Credits</td>
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<td>30</td>
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Students who already have taken MATH 621/MATH 622 and/or MATH 631/MATH 632 (or equivalent courses as another institution) as undergraduates may request permission to take alternatives from the following list:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>MATH 711 &amp; MATH 712</td>
<td>Theory of Functions of a Real Variable I and Theory of Functions of a Real Variable II</td>
<td>6</td>
</tr>
<tr>
<td>MATH 713 &amp; MATH 714</td>
<td>Theory of Functions of a Complex Variable I and Theory of Functions of a Complex Variable II</td>
<td>6</td>
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<tr>
<td>MATH 731 &amp; MATH 732</td>
<td>Abstract Algebra I and Abstract Algebra II</td>
<td>6</td>
</tr>
<tr>
<td>MATH 751 &amp; MATH 752</td>
<td>Introductory Topology I and Introductory Topology II</td>
<td>6</td>
</tr>
</tbody>
</table>

Program Requirements

Major Professor as Advisor

The student must have a major professor to advise and supervise the student's studies as specified in Graduate School regulations. The
Associate Chair for Graduate Programs assigns a temporary advisor for the entering graduate student.

**Examination**
The student must pass a written comprehensive examination.

**Time Limit**
The student must complete all degree requirements within 5 years of initial enrollment. Normally, the student can complete all degree requirements within two years of initial enrollment. Students who have prior graduate coursework may be able to complete the degree requirements in 1 year.

**Financial Support**
The Department of Mathematical Sciences does not offer financial support to students enrolled in this program.