APPLIED MATHEMATICS (M.A.)

This degree is designed for students who are interested in applied mathematics or are interested in applying mathematics to areas outside of mathematics (e.g., biology, chemistry, computer science, economics, engineering, geology, medical science, physics, psychology, social science). The program is flexible in that it does not represent the teaching of any fixed body of knowledge. It does require two areas of concentration, one of these being the major in mathematics (pure and applied) with emphasis on the applicable subjects. The minor area is to be either in applied mathematics or in an area outside of mathematics (such as the above) to which the student is interested in applying mathematics. Mathematical methods are emphasized.

Admission Requirements

Admission to this program is contingent upon admission to the Graduate School (http://bulletins.wayne.edu/graduate/general-information/admission). Applicants for the Master of Arts in Applied Mathematics should have a good background in the area in which they are planning to apply mathematics, but a bachelor's degree in mathematics is not required. Applicants must also have attained twelve credits beyond the calculus sequence or knowledge equivalent to the following:

- MAT 2010 Calculus I 12
- MAT 2020 and Calculus II
- MAT 2030 and Calculus III
- MAT 2250 Elementary Linear Algebra 3
- MAT 2350 Elementary Differential Equations 3
- MAT 5070 Elementary Analysis 4
- MAT 5420 Algebra I 4
- CSC 2110 Computer Science I 3

This program is usually offered as a Plan B master's degree option requiring twenty-nine credits of course work plus a three credit essay. However, Plan A (master's thesis) and Plan C (course work only) options are available with the approval of the Departmental Graduate Committee.

1. A minimum of thirty-two credits.
2. A minimum of twenty credits in mathematics courses not previously completed from the following list (additional courses may be approved on an individual basis):
   - MAT 5030 Statistical Computing and Data Analysis 3
   - MAT 5100 Numerical Methods I 3
   - MAT 5110 Numerical Methods II 3
   - MAT 5210 Advanced Calculus 4
   - MAT 5220 Partial Differential Equations 4
   - MAT 5230 Complex Variables and Applications 4
   - MAT 5280 Methods of Differential Equations 3
   - MAT 5350 Logical Systems I 4
   - MAT 5400 Elementary Theory of Numbers 3
   - MAT 5410 Applied Linear Algebra 4
   - MAT 5420 Algebra I 4
   - MAT 5430 Algebra II 4
   - MAT 5520 Introduction to Topology 3

3. A minimum of eight additional credits in the student's declared minor area.
4. A final oral examination. All students in Plan C are required to take this examination. Students in Plan A or Plan B may, upon recommendation of the thesis or essay advisor, be excused from the final oral examination by the Departmental Graduate Committee.
5. A public lecture on the thesis or essay for each student in Plan A or Plan B.
6. By the time twelve credits have been earned, each student must submit a Plan of Work, approved by a departmental advisor, to the director of the program. In the Plan of Work, the student must choose Plan A, Plan B, or Plan C. The Plan of Work must be approved by the Departmental Graduate Committee, at which time the student will be advanced to candidacy. Students are not allowed to take more than twelve credits in the program unless candidacy has been established.

Each student in this program is ordinarily required to write a project-type essay for three credits under the direction of a supervisor in the Department of Mathematics and an essay advisor from some department related to the minor area, both of whom must approve the essay. (If the chosen minor area is in applied mathematics, the adviser in the major area can be the same as the adviser in the minor area.) The selection of
advisors and topics must be approved by the Departmental Graduate Committee.

NOTE: The following courses cannot be applied towards this degree:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAT 5000</td>
<td>Fundamental Concepts of Mathematics and Proof Writing</td>
<td>3</td>
</tr>
<tr>
<td>MAT 5070</td>
<td>Elementary Analysis</td>
<td>4</td>
</tr>
</tbody>
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The following courses can only be applied towards requirement three for the minor in education:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAT 6130</td>
<td>Discrete Mathematics</td>
<td>3</td>
</tr>
<tr>
<td>MAT 6140</td>
<td>Geometry: An Axiomatic Approach</td>
<td>3</td>
</tr>
<tr>
<td>MAT 6150</td>
<td>Probability and Statistics for Teachers</td>
<td>4</td>
</tr>
<tr>
<td>MAT 6170</td>
<td>Algebra: Ring Theory Through Exploration, Conjecture, and Proof</td>
<td>4</td>
</tr>
<tr>
<td>MAT 6180</td>
<td>Algebra: Group Theory Through Exploration, Conjecture, and Proof</td>
<td>3</td>
</tr>
<tr>
<td>MAT 6200</td>
<td>Teaching Arithmetic, Algebra and Functions from an Advanced Perspective</td>
<td>3</td>
</tr>
<tr>
<td>MAT 6210</td>
<td>Teaching Geometry, Probability and Statistics, and Discrete Mathematics from an Advanced Perspective</td>
<td>3</td>
</tr>
</tbody>
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**Academic Scholarship:** All course work must be completed in accordance with the regulations of the Graduate School (http://bulletins.wayne.edu/graduate/general-information/academic-regulations) and the College of Liberal Arts and Sciences (http://bulletins.wayne.edu/graduate/college-liberal-arts-sciences/academic-regulations).