M.S. in Mathematics

Program Guidelines
The Master of Science degree in mathematics at Montana State University is designed to prepare students for further graduate work or for employment in academic, industrial, business, or government forums. Upon entrance, each student meets with the department's Graduate Program Committee to discuss career objectives and first year course work. During the second semester in the program each student forms a Graduate Committee and together, they outline the student's degree program.

Program Prerequisites
The prerequisites for the master's degree program in mathematics consist of the following courses or their equivalent: 4 semesters of Calculus through Differential Equations, Linear Algebra (M 333) and a proof based course in Advance Calculus or Introduction to Analysis I (M 383). Second semester of Analysis is preferred, but not required.

Requirements
The Master of Science degrees are offered under Plan A (Thesis) and Plan B (Non-thesis). Of the required thirty (30) credit minimum, at least eighteen (18) credits of 500-level course work must be taken under either plan.

Available under Plan B is a comprehensive master's degree in either mathematics or statistics. Although no thesis is required in this plan, a sound knowledge of several areas of mathematics and/or statistics is expected. Also available under Plan B is a master's degree in mathematics with an option in mathematics education. This option is designed primarily for secondary teachers and is offered as a combination of on-line academic year course work and summer sessions. The mathematics education option requires completion of a program portfolio.

For further information, refer to the For Master's Students section. Students are expected to be familiar with both the Department and the Graduate School degree requirements.

Both non-thesis and thesis plans are offered for the M.S. in Mathematics – Mathematics Option degree:

Non-Thesis Plan
This plan requires both completing the course work and passing the written comprehensive exam. At least 30 credits of course work are required. Of these, at least 18 credits must be numbered 500 or higher. Regardless, all of the following core courses must be completed:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>M 503</td>
<td>Advanced Linear Algebra</td>
<td>3</td>
</tr>
<tr>
<td>M 504</td>
<td>Abstract Algebra</td>
<td>3</td>
</tr>
<tr>
<td>M 505</td>
<td>Principles of Mathematical Analysis</td>
<td>3</td>
</tr>
<tr>
<td>M 511</td>
<td>General Topology</td>
<td>3</td>
</tr>
<tr>
<td>M 441</td>
<td>Numerical Linear Algebra &amp; Optimization</td>
<td>3</td>
</tr>
<tr>
<td>M 450</td>
<td>Applied Mathematics I</td>
<td>3</td>
</tr>
<tr>
<td>M 454</td>
<td>Introduction of Dynamical Systems I</td>
<td>3</td>
</tr>
<tr>
<td>STAT 421</td>
<td>Probability Theory</td>
<td>3</td>
</tr>
</tbody>
</table>

Additionally, students must fulfill a breadth requirement by completing at least two of the following:

* Either or both of these two required courses may be replaced by the corresponding semester of the appropriate 500 level course: M 581 Numerical Solution of Partial Differential Equations I, M 560 Methods of Applied Mathematics I, M 595 Dynamical Systems I, or STAT 501 Intermediate Probability and Statistics, respectively. Any other exceptions to the course requirements must be approved by the student's graduate committee and adhere to the minimum policy requirements set forth in the Graduate Catalog (Plan B).

Requirements for the written comprehensive exam are listed separately.

Thesis Plan
This plan requires completing the course work, writing a thesis, and an oral defense of the thesis. At least 30 credits must be completed of which 18 must be thesis credits. Students must also complete both the core and breadth course requirements described in the Non-Thesis Plan above. Any exceptions to the course requirements must be approved by the student's graduate committee and adhere to the minimum policy requirements set forth in the Graduate Catalog (Plan A). Thesis and oral defense requirements must be arranged with and approved by the student's graduate committee.

M.S. in Mathematics Comprehensive Exam
The M.S. comprehensive exam for mathematics is a written exam administered in two disjoint 3-hour components, one on Analysis (M 505) and one on Linear Algebra (M 503). Each component is graded as Ph.D. pass, M.S. pass, or fail. In order to pass the written comprehensive exam, a student must pass each component at the M.S. pass or Ph.D. pass level within two examination periods. The examinations are given in August and January with specific dates and times for each component determined by the department. Typically, the student takes the exams in August before their third semester of study.

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If the student fails one or more components in the first examination period, a failure will be reported to The Graduate School. The student must then pass the remaining required components in a second examination period. If the student has not passed the remaining required components after the second examination period, a second failure of the comprehensive exam will be reported to The Graduate School and the student will be dismissed from the program.

For more information, refer to the Department of Mathematical Sciences (http://www.math.montana.edu).
Font Notice

This document should contain certain fonts with restrictive licenses. For this draft, substitutions were made using less legally restrictive fonts. Specifically:

Times was used instead of Adobe Garamond Pro.

The editor may contact Leepfrog for a draft with the correct fonts in place.