

Comprehensive exam or thesis?

In addition to course requirements, there are two options to completing the MS degree in the Department of Mathematical Sciences: a written comprehensive exam or a master's thesis. Each option has its own merits in completing this course of study, and a student is encouraged to think seriously about this choice.

The MS comprehensive exam option:

The MS Comprehensive Exam is given twice a year, usually in November and April. After the student has turned in the application, the graduate coordinator will send the student study guides for each section the student has selected. The study guide contains an outline of topics, suggested references and sample questions. Studying tips:

- A complete review of the study guide is a good starting point for preparation. In addition, the student should study from the text and the notes from his or her classes.
- Study groups can be very helpful in reviewing a subject. Students who study together tend to motivate each other. Trying to explain a concept to someone else is a good way to reinforce it in your mind.
- One particular problem is when the student has taken the course several years before taking the comprehensive exam. The text and part of the content may have changed over the years. In this case, the student should find out the most recent text and most recent instructor of the course. A meeting with this instructor could be beneficial.
- If the student has any questions he or she should not hesitate to contact the graduate coordinator. Often a brief visit can avoid any misconceptions.

If a student does not achieve a satisfactory grade on the comprehensive exam, it may be retaken, but be aware that there is a limit. Three failures of this exam will terminate the degree.

The MS thesis option:

A graduate thesis is a permanent record of a significant contribution made by a student to a particular field of knowledge. Expectations are that the thesis should be new and original. It should be something that is publishable, leading to at least one peer-reviewed article. This represents a considerable undertaking on the part of the thesis advisor and the student and should be carefully considered in the decision to obtain the final degree. Expect that a project will take at least one year to finish, concluding with an oral examination and a written report of the research results that must be approved by a thesis committee.

Participating in a thesis is quite different from completing coursework, demanding much more time and concentration. It also demands significant capability for independent, self-guided research. It is important to note that in most cases, none of the coursework taken

by students in the masters program has prepared them for the job of doing this type of research or writing this independent scholarly work.

If an advisor agrees to take on a student, there is a commitment on both parts to produce the highest quality thesis possible in a timely fashion. Students should carefully select their thesis advisor because a good working rapport will be necessary. The advisor will be responsible for directing the project, ensuring the originality and integrity of the student's research. Switching advisors after a project has begun is not encouraged. A thesis advisor might require demonstration of facility in research and independent work by requesting a probationary Independent Study of 1-3 credits before making any decisions about directing a thesis.

Students are responsible for following the requirements set forth in the thesis guide, but some important issues to keep in mind are:

- The thesis advisor must be a full-time tenured or tenure-track faculty member in the student's department. The thesis committee will consist of the thesis advisor and two other faculty members.
- The student is required to prepare a thesis proposal/outline. This is a document that provides a clear statement of the research issue, an extended literature review, a proposed research design/methodology, and an annotated bibliography. In developing this document, it is imperative that students work closely with the thesis sponsor. Although they are not usually asked to review the outline until it is completed, other committee members may be approached for assistance. Thesis proposals may have to be rewritten and resubmitted before gaining approval of the thesis committee.
- As advised by the thesis advisor, the student should keep each member of the committee aware of his or her research progress. These informal reports are intended only as an update and to avoid major revisions at the end of the project.
- The written thesis should be available to the entire department before the scheduled defense (one copy to the Thesis advisor). A copy of the thesis will be available in the department office.
- An oral defense of the thesis will be held at least four weeks prior to the date of graduation to demonstrate an understanding of the topic and the ability to discuss related issues and concerns. It will use the following format: a) the student presentation (approximately 20 minutes); b) general questions from audience and/or committee; c) committee discussion with student (audience excused); and d) committee discussion without student.

Unanimous approval by all three committee members is necessary to pass.

Choosing the right option:

Students should make a decision between the thesis and comprehensive options four or more semesters before their planned degree completion date. Both options are very demanding, but in different ways. The decision should depend on the student's

strengths, interests, and particular situation. Switching from one option to another is not encouraged due to the time involved in preparing for each option.