

Guidelines for Master's Thesis (Research Option for MS in Statistical Science Degree)

Note: These guidelines are a supplement to the Mason catalog, which is the official guideline for all students.

The research option for the MS in Statistical Science degree requires 30 credits, including 6 credits that must be in independent research (thesis). The thesis is usually written in the context of 6 credits of STAT 799 (Master's Thesis), which count as elective credits. The remaining 24 credits toward fulfillment of requirements for the MS in Statistical Science degree include 12 credits of core courses and 12 credits of methodology courses.

A master's thesis is original, independent research presented in the form of a scholarly document that has the potential to be published in a professional journal. The thesis should demonstrate a student's ability to carry out independent research. This research should be closely related to the student's general academic objectives and should contribute to the student's understanding of statistical methodology and theory.

Research for the thesis is done under the guidance of a thesis advisor, who is typically a faculty member in the Department of Statistics. Research may be carried out at Mason or, if appropriate, at nearby facilities. For example, students may pursue research at their place of employment on topics of interest to their employer, provided the research meets the standards of the university.

A student choosing the research option must submit a written thesis proposal and a written thesis to a thesis committee for approval. The composition and appointment of this committee follows Mason policy as detailed in Section AP.6.9 in the Mason catalog. Also, the student must orally defend the thesis. The thesis committee makes the final decision on whether the student passes or fails.

Completion of Thesis

Completion of a master's thesis in fulfillment of requirements for the MS in Statistical Science degree involves a four-step process.

- 1) Identify a thesis advisor and a thesis committee.
- 2) Prepare a thesis proposal and obtain approval from the thesis committee.
- 3) Write the thesis.
- 4) Defend and submit the thesis.

A student may not enroll in STAT 799 (Master's Thesis) until he/she have completed Steps 1 and 2.

Step 1: Identify a thesis advisor and a thesis committee.

- Identify a thesis topic.
When choosing a topic, the student should take into consideration his/her background and interests, ability to handle the proposed problem, accessibility of research materials, and probable significance of the project.
Note: If the student does not have a specific topic but decides to do a master's thesis, then the student may want to first identify a thesis advisor who can assist in identifying a topic.
- Identify a thesis advisor who is familiar with the topic and available to supervise the thesis.
- Consult with the thesis advisor about potential thesis committee members. The committee must be approved by the Director for the MS in Statistical Science program.

- The committee consists of a minimum of three members of the graduate faculty, at least two of which must have full-time appointments in the Department of Statistics. A third member may be either from the Department of Statistics, another local academic unit (department, institute, or center), or from outside the university.
 - The thesis committee chair must be a member of the graduate faculty with a full-time appointment in the Department of Statistics.
 - The thesis advisor is a member of the thesis committee, and may serve as the committee chair if qualified.
 - Those who are not members of the graduate faculty or other appropriate persons not affiliated with Mason may serve as a fourth member at the discretion of the committee chair.
- Begin discussing your thesis topic with your thesis committee members.

Note: It is the student’s responsibility to identify a thesis advisor and the members of the thesis committee.

Action Item: The student must complete the **Master's Thesis Committee Designation** form available from the Department of Statistics and obtain all necessary committee member signatures. For final approval and processing, the form must be delivered to the Department of Statistics Administrative Office.

Step 2: Prepare a thesis proposal and obtain approval from the thesis committee.

The thesis proposal is developed in consultation with, and must be approved by, the thesis committee.

Writing a detailed thesis proposal is the key to successful and timely completion of work. A discussion of ideas with each committee member prior to writing the proposal will help clarify the approach to be taken.

An acceptable written thesis proposal should include the following:

- A clear, detailed description of the research problem or hypothesis to be addressed.
- An explanation of the reasons for choosing the topic and how it relates to the student’s statistical education.
- An initial literature review of the current and past research related to the chosen topic, and the additional sources to be examined and presented in the final thesis.
- A discussion of the methods to be employed and/or a description (maybe including graphics) of the data to be analyzed.
- A discussion of the expected outcomes of the research.
- A time line for completion of the thesis that has been coordinated with the committee members.

The student should submit the proposal as early as possible to the committee for comments, and expect to be asked by the thesis committee to make changes to the proposal. Proposals containing grammatical errors or poor writing will not be approved.

When the thesis advisor and thesis committee chair determine that the proposal is sufficient, the student will “defend” the proposal. This defense may consist of an oral presentation or some other format for the exchange of ideas among the committee and the student based on the proposal that has been submitted. The format of the proposal defense is at the discretion of the thesis committee chair.

Action Item: The student must complete the **Master's Thesis Proposal Approval** form available from the Department of Statistics and obtain all necessary committee member signatures. For final approval and processing, the form, along with a copy of the proposal, must be delivered to the Department of Statistics Administrative Office. **A student may not enroll in STAT 799 (Master’s Thesis) until the proposal is approved by the committee, and the completed form and proposal are submitted to the dean’s office.**

Step 3: Write the thesis.

After the proposal has been submitted and approved, the student may enroll in STAT 799 (Master's Thesis) at the beginning of the next semester.

Registration for STAT 799

The student must have been officially admitted to the MS in Statistical Science program before registering for STAT 799.

The student must register for a minimum of three credit hours of STAT 799 in his/her first semester. After that semester, the student must enroll for a minimum of one credit of STAT 799 per semester. Mason policy requires all students enrolled in STAT 799 to maintain continuous enrollment in at least one credit of STAT 799 per semester while working on the thesis. Continuous enrollment does not apply to the summer session unless the student anticipates graduating in that session. Although the student may register for up to 6 credits in any semester, this is entirely at the discretion of the thesis committee chair, and the norm is to register for three credits per semester for two consecutive semesters.

The student should obtain a copy of the "Individualized Section Form" (<http://registrar.gmu.edu/wp-content/uploads/IS.pdf>), fill it out, obtain all necessary signatures, and deliver to the Registrar's office by the last day to add for the semester. The instructor for the course is the thesis committee chair.

Graduation candidates who miss the library deadline for thesis submission but do submit officially before the next semester begins do not have to register for STAT 799 in that next semester, but must stay active to graduate.

Content of Thesis

The student is responsible for keeping all committee members informed of the scope, plan, and progress of both the research and the written thesis.

The content of the thesis is the responsibility of the student, who should rely on frequent input and direction from the thesis advisor and other committee members to ensure that it is acceptable. All questions concerning the content of the thesis and its organization should be resolved with the student's thesis advisor and other committee members.

The thesis must be of high quality as reflected in the clarity of the writing, the cogency of the argument, and the thoroughness of the research.

The thesis must conform to the format and guidelines specified by University Dissertation and Thesis Services. The thesis will not be accepted by the library, and graduation will be delayed if these guidelines are not closely followed. The student should consult these guidelines (<http://thesis.gmu.edu/>) early in the process (ideally beginning with the proposal) and frequently throughout the thesis research to ensure an acceptably formatted thesis document. Also, the student should plan on meeting with the thesis coordinator in the Fenwick Library to discuss the formatting of the written thesis.

The thesis may only be submitted after the formal defense, but should be checked by the library Thesis Coordinator prior to the defense.

Grading of STAT 799

A student registered in STAT 799 is graded IP until work is complete; at that time the IP grades are updated by the Registrar's Office to reflect the final S or NC grade.

Action Item: The student must submit the required paperwork to register for STAT 799 each semester until the thesis is completed.

Step 4: Defend and submit the thesis.

Once the thesis committee members determine that the thesis is ready to defend, the student arranges the defense with all committee members and lets the department know of the scheduled date so that it can be properly advertised and a room can be reserved.

A defense should be advertised within the department and the Volgenau School of Engineering at least two weeks prior to the defense date (via email and/or posted flyers). The template for the flyer is available from Leslie Carl (lcarl@gmu.edu). Requests for departmental announcements should be coordinated with Leslie Carl; the Department will make the request for the Volgenau School of Engineering announcement.

At the defense, the student will give a public presentation of the research and results in defense of the thesis, followed by questions from the public and the thesis committee. After the public presentation, the committee may, at their discretion, conduct a private examination of the student with further questions. The committee will discuss and vote in private and inform the student of the result of the thesis defense.

A successfully defended thesis must also meet the thesis requirements of the university. The student is responsible for knowing the university's deadline for thesis submission (<http://thesis.gmu.edu/>) for the selected graduation term.

The student should take care that the defense is held early enough to ensure that any requested changes in the thesis can be made, and any formatting issues corrected, prior to the university thesis submission deadline, which is generally no later than 5 p.m. on the Friday prior to the last day of classes for the term.

Action Items: Upon successful defense of the master's thesis:

- The student must complete the **Master's Thesis Defense** form available from the Department of Statistics and obtain all necessary committee member signatures. For final approval and processing, the form, along with a copy of the thesis, must be delivered to the Department of Statistics Administrative Office.
- Once the thesis is approved by the dean's office, the student is ready to submit the thesis to the library.
- The student must request one bound copy of the thesis for the Department of Statistics; committee members may also request bound copies from the student. The library will provide the student with an order form.
- The chair of the thesis committee must submit change of grades for STAT 799 from IP to S to the Registrar's Office.



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Master's Thesis Committee Designation Form

It is the student's responsibility to complete this form, obtain all committee member signatures, and submit to the Department of Statistics Administrative Office.

Date: _____

Student's Name: _____

G#: _____

E-mail: _____

Thesis Advisor: _____

The undersigned committee has agreed to support the ongoing master's thesis preparation process.

Committee Members:

Name/Affiliation:

Signature:

Committee Chair

Approval:

Program Director, MS in Statistical Science: _____



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Master's Thesis Proposal Approval Form

It is the student's responsibility to complete this form, obtain all committee member signatures, attach this completed form to a copy of the approved thesis proposal, and submit the form and proposal to the Department of Statistics Administrative Office.

Date: _____

Student's Name: _____

G#: _____

E-mail: _____

Proposed Thesis Title: _____

Thesis Advisor: _____

Schedule or Tentative Thesis Defense Date: _____

The undersigned committee has reviewed the attached proposal and agrees that the student above has prepared an acceptable plan for conducting master's thesis research. We approve this plan and will support the ongoing thesis preparation process.

Committee Member Approval:

Name:

Signature:

Committee Chair

Approval:

Program Director, MS in Statistical Science: _____

Senior Associate Dean, Volgenau School of Engineering: _____



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Master's Thesis Defense Form

It is the student's responsibility to complete this form, obtain all committee member signatures, attach this completed form to a copy of the defended thesis, and submit the form and thesis to the Department of Statistics Administrative Office. A bound copy of the thesis must be submitted to the Department of Statistics Administrative Office within two weeks of final approval.

Date of Thesis Defense: _____

Student's Name: _____

G#: _____

E-mail: _____

Thesis Title: _____

Thesis Advisor: _____

The student has successfully defended the thesis to the satisfaction of the undersigned committee.

Committee Member Approval:

Name:

Signature:

Committee Chair

Approval:

Program Director, MS in Statistical Science: _____

Senior Associate Dean, Volgenau School of Engineering: _____