

Student Handbook

UNCG Department of Mathematics and Statistics

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Introduction

The Department of Mathematics and Statistics at the University of North Carolina at Greensboro offers a Ph.D. in computational mathematics, an M.A. in Mathematics with concentrations in Mathematics or Statistics, and a Post-Baccalaureate Certificate in Statistics. This handbook serves as a resource for students enrolled in these programs. The Graduate School's Bulletin is available at <http://uncg.smartcatalogiq.com/> and contains general policies, calendars and deadlines, course descriptions, and a listing of faculty members.

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Advising and Registration

Entering students are expected to consult with the Graduate Director prior to registering for classes in their first term. Once a student selects a thesis or dissertation committee, the chair of the committee will become the student's academic advisor. Your advisor will provide you with a code that you can use to register for classes. Please register prior to the deadline to avoid late registration fees. Students who receive a Graduate Teaching Assistantship may also receive a tuition waiver and so may not have to pay for tuition. All students are responsible for paying all student fees.

Enrollment Requirements

Enrollment requirements vary based on your status and your program. Students are expected to enroll in graduate-level courses in the Department of Mathematics and Statistics. Registering for courses outside of the Department may be done only in consultation with the Graduate Director and the Dissertation Chair.

1 Graduate Teaching Assistants

All graduate students who receive support of any kind from the department are required to enroll in a minimum of 9 semester hours during fall and spring semesters. Students who are completing their dissertation research may have this number reduced at the end of their program by submitting an approved plan of study to the Graduate Director and the Graduate School. See section 11 for additional details.

2 Unsupported Students

All full-time graduate students are required by the graduate school to take at least 6 semester hours per semester during the fall and spring.

3 Continuous Enrollment

All graduate students are expected to maintain continuous enrollment. Students who do not enroll in two consecutive semesters (summer is included!) will be dropped from the program by the Graduate School and will have to reapply for admission. If you need to leave the program for any length of time, consult with the Graduate Director and fill out a Leave of Absence form: <http://grs.uncg.edu/forms/LeaveofAbsence.pdf>.

4 North Carolina Residency

All eligible Graduate Teaching Assistants are requested to apply for in-state residency as soon as possible. Students should apply to change their drivers' license and car registration as soon as possible upon entering the state. Students may apply for residency no sooner than one year after beginning employment/school in the state. Instructions for applying for North Carolina residency for tuition purposes can be found here: <http://www.uncg.edu/pvt/residency/brochure.html>.

5 Tuition Waivers

The department has a number of tuition waivers to offer to Graduate Teaching Assistants. Tuition waivers will cover the tuition for up to 12 semester hours, but they do not cover any student fees. All students are responsible for paying student fees.

6 Awards and Scholarships

The department has a number of scholarships available to graduate students. Please see <http://www.uncg.edu/mat/undergraduate/scholarship/> for details.

Graduate School Requirements and Forms

The Graduate School's website contains links to many forms. All links to these forms can be found here: <http://grs.uncg.edu/forms/> Forms are required to do the following.

- Apply for graduation.
- Take a leave of absence.
- Declare or change a concentration (MA students).
- Request permission to take an independent study course.
- Submit a passing score on oral exams or thesis defense.
- Form your committee.
- Revise your plan of study.
- Seek dissertation topic approval.
- Submit passing scores on qualifying exams.

- Apply to doctoral candidacy (required in order to register for dissertation hours).
- Deliver results of your dissertation defense.

Program Requirements

7 Post-Baccalaureate Certificate in Statistics

7.1 Description

The purpose of the 12-hour Post-Baccalaureate Certificate in Statistics is to provide statistical training for persons who wish to enhance their knowledge of statistics but do not wish to pursue a formal degree and for professionals whose interests require a knowledge of statistics beyond the undergraduate level. The objective of the certificate is to offer a structured introduction to the basic ideas of graduate level statistical analysis.

7.2 Degree Requirements

7.2.1 Required Courses.

All students are required to take

STA 661	Adv. Statistics in the Behavioral and Biological Sciences I
STA 662	Adv. Statistics in the Behavioral and Biological Sciences II

7.2.2 Electives.

Additionally, all students must complete any two three-hour STA courses at or above the 500-level excluding:

STA 571	Statistical Methods for Research I
STA 571L	Statistical Methods Laboratory I
STA 572	Statistical Methods for Research II
STA 572L	Statistical Methods Laboratory II
STA 580	Biostatistical Methods

8 Master of Arts in Mathematics

8.1 Description

The MA in Mathematics is offered in two areas of concentration: mathematics (30-33 hours) and applied statistics (33 hours). Course work must be approved by the Department of Mathematics and Statistics and must include certain courses as explained in the discussion of the concentrations.

Students who plan to continue to the PhD program in computational mathematics are urged to elect the exam option.

8.2 Mathematics Concentration

There are two options for the mathematics concentration. At least half of the work credited towards the degree must be in 600- or 700-level courses.

8.2.1 Coursework

Refer to the Graduate Bulletin for details concerning required courses. A brief summary follows.

Each student must register for one course among MAT 517, MAT 545, MAT 591, or MAT 595. Students with exceptionally strong backgrounds may be exempted from this requirement with approval of the Graduate Director. Other required courses must come from the core courses and electives described in the bulletin. All students must complete at least one year-long sequence of core courses.

8.2.2 Thesis Option

The thesis option requires 24 semester hours of coursework and 6 semester hours of MAT 699 (Thesis). Students selecting this option will be required to complete a thesis based on investigation of a topic in mathematics. A thesis director will be appointed by the Department Head after consultation with the student and the Director of Graduate Study. An oral examination of the thesis is required.

8.2.3 Exam Option

The exam option requires 33 semester hours of course work. To satisfy the exam requirement students must earn scores of MA Pass or PhD Pass on at least two PhD qualifying exams. MA students who apply to the PhD program after completing the MA degree may apply any scores of PhD pass on their MA exams towards the PhD Qualifying Exam requirement.

8.3 Applied Statistics Concentration

The Applied Statistics Concentration is a 33 semester hour program that culminates in a thesis or project.

8.3.1 Coursework

The coursework for the Applied Statistics concentration is specified in the Graduate Bulletin. It consists of foundation courses, core courses, statistics electives, and interdisciplinary electives.

8.3.2 Thesis Option

The thesis option requires 27 semester hours of coursework and 6 hours of STA 699 (Thesis). Students will prepare a thesis based on the investigation of a topic in statistics. A thesis director will be appointed by the Department Head after consultation with the student and the Director of Graduate Study. An oral examination of the thesis is required.

8.3.3 Project

A student who does not prepare a thesis must complete a project under the direction of an advisor appointed by the Department Head after consultation with the student and the Director of Graduate Study. Three hours of STA 698 will be included in the 33-hour program.

9 PhD

9.1 Typical Timeline

Year	Expectation
1	Enroll in MAT 601 and at least one of MAT 591-2, MAT 595-6 Take at least one Qualifying Exam in the summer after the first year.
2	Enroll in at least one other course leading to Qualifying Exam. Pass any remaining Qualifying Exams in the summer after the second year.
3	Find dissertation supervisor and committee. Defend dissertation proposal (Oral Exam).
4-5	Work on dissertation. Defend dissertation before the end of fifth year (Oral Exam).

9.2 Plan of Study

All students should submit a plan of study to the Graduate School once they have formed their committee and defended their dissertation topic (usually before the end of their third year).

9.3 Course Requirements

9.3.1 General Requirements

The student selects 39-42 hours of course work in mathematics and related areas with the approval of the Director of Graduate Study. With the approval of the Director of Graduate Study, up to 13-14 of the 39-42 hours may be accepted from UNCG's MA in mathematics program or from a comparable master's program.

9.3.2 Graduate School Requirements

The following restrictions on credits are placed on all PhD degrees by the graduate school.

- No more than one quarter of the hours credited toward the PhD may be at the 500-level, exclusive of the dissertation. Thus, students may only use up to 9 semester hours of 500-level credit towards the 39-42 required hours.
- Students may take up to 15 hours of independent study, exclusive of the dissertation.
- No credit evaluated as B- (2.7) or lower can be counted towards the degree.

9.3.3 Transfer Credit

The Graduate School allows students to transfer work done from other institutions to UNCG to be counted towards the degree. The following conditions apply to transfer credit:

- If the student proposes the transfer of credit from another graduate school, the work for which credit was received must be covered by the preliminary examination, and the transfer must be recommended by the student's dissertation committee before the Graduate School will credit the work to the student's doctoral program.
- In no case will more than one third of non-dissertation course credit hours beyond the master's degree be transferred to doctoral programs. Thus, students may transfer 13-14 hours, depending on their coursework.
- The courses must have been taken at an accredited graduate school and the student must have earned a grade of B (3.0) or better. Such credit must appear on an official transcript that is filed with the graduate school.
- All time limits apply to transferred credit.
- See the Graduate Bulletin for the policy on converting quarter hours to semester hours.

9.4 Qualifying Exams

Qualifying examinations, covering the student's chosen field of research and related advanced course work, must be taken after the student has removed any provisions or special conditions attached to admission; one exam should be passed at the end of the second semester and all three exams should be passed prior to the beginning of the sixth semester to maintain satisfactory progress towards the degree and guarantee continuation of funding (if applicable). These examinations each cover the material of two courses. Each student must pass at least one exam from Group I.

Students may make five total attempts to pass three qualifying exams. Failure to pass three exams within five attempts will result in dismissal from the program.

Each exam is written and graded by a committee of three faculty members appointed by the Graduate Director. Three possible scores are available on each exam: PhD Pass, MA Pass, and Fail. Each exam committee is responsible for establishing the format and grading criteria that are appropriate for the exam. A grade of Fail on any qualifying exam may jeopardize continued funding.

Old exams and topic lists are available in the Department Library in Petty 116.

Group I		
Exam Name	Associated Courses	
Algebra	MAT 591	Advanced Abstract Algebra
	MAT 592	Advanced Abstract Algebra
Analysis	MAT 595	Mathematical Analysis
	MAT 596	Mathematical Analysis
Linear Algebra	MAT 647	Linear Algebra and Matrix Theory
	MAT 648	Linear Algebra and Matrix Theory

Group II		
Exam Name	Associated Courses	
Combinatorics	MAT 631	Combinatorics
	MAT 632	Graph Theory
Differential Equations	MAT 545	Diff Eq & Orthogonal Sys
	MAT 546	PDEs with Applications
Mathematical Statistics	STA 651	Mathematical Statistics
	STA 652	Mathematical Statistics
Numerical Mathematics	MAT 623	Numerical Mathematics
	MAT 624	Numerical Mathematics
Sampling and Design	STA 675	Adv. Experimental Design
	STA 676	Sample Survey Methods
Topology	MAT 697	General Topology
	MAT 698	General Topology

9.5 Choosing a Dissertation Advisor and Committee

Once three qualifying exams have been passed at the level of PhD pass, the student should find a dissertation advisor and form a dissertation committee. The dissertation advisor must be a member of the graduate faculty in the Department of Mathematics and Statistics who holds an endorsement to chair doctoral committees. When the student and advisor have agreed to work together, with the approval of the Graduate Director and Department Head, they form the dissertation committee. At this time the dissertation supervisor will also assume the role of the student's academic advisor. Finally, students should begin to work with their advisor on their plan of study to ensure timely graduation.

9.5.1 Preliminary Oral Exam

Once the student and dissertation advisor have formed the dissertation committee, the student should begin to work towards a topic for the dissertation. At the end of the third year, the student will present an oral topic defense. Unanimous approval by the dissertation committee is required to pass the preliminary oral exam. If the student does not pass the exam, no more than one re-examination will be allowed. The re-examination will not be permitted in the semester in which the preliminary oral exam was failed. If the student fails to pass the re-examination, the Graduate School will dismiss the student from the program.

In the oral exam the student must demonstrate their capability to begin research on the selected topic. Part of the exam will involve a computational component. The computational component should clearly demonstrate that the student is capable of handling computational aspects of the intended dissertation topic.

9.5.2 Computational Component

Each dissertation should have a significant computational component. Students should work with their advisors, committee members, or other experts to include a significant computation in the dissertation.

9.5.3 Admission to Candidacy

When the student has completed the qualifying exams and the topic defense, they should submit their dissertation research outline to their committee. Once this has been approved, the student may apply to the graduate school for formal admission to candidacy for the doctoral degree. This status is necessary to register for dissertation hours.

9.5.4 Dissertation Defense

The student's research will be prepared in a dissertation, which is defended in a public oral exam. The dissertation must be acceptable to each member of the student's dissertation

committee and the Graduate School. The dissertation defense can occur at most twice.

Students must apply to defend their dissertation by filling out the appropriate forms with the graduate school **two weeks** prior to the scheduled defense. The final date for defense of dissertations varies each semester, and is roughly a month before graduation. Students also must apply to graduate. The application is due by the end of the first week of classes.

9.6 Residence Requirement

The Graduate School expects doctoral students to satisfy a residence requirement. Students must enroll in two consecutive full-time semesters of graduate coursework on the campus after admission to a program. Undergraduate courses taken in support of a graduate program cannot count towards residence.

Satisfactory Progress

10 Grade Point Average Requirement

10.1 Continued Departmental Support

Continuing students must maintain a grade point average of 3.5 or higher (on a 4.0 scale) to satisfy the GPA requirement. Students whose GPA falls below 3.5 will not be guaranteed continued support by the department, but may receive funding on a competitive basis.

10.2 Dismissal From the Program

The graduate school requires all credit applied to the degree to be evaluated as B (3.0) or better. Graduate student earning grades of U, F, or WF in any 6 semester hours or grades of C, C-, U, F or WF in any 9 semester hours will be deemed academically ineligible to continue by the Graduate School and will be dismissed from the program. Students who are dismissed from a graduate program may apply for readmission by submitting a new application after two semesters and may be readmitted only with the approval of the department head or the director of graduate study and with the approval of the Dean of the Graduate School.

11 Enrollment Expectations

All supported Graduate Teaching Assistants are expected to enroll in at least 9 semester hours in fall and spring semesters. Any graduate teaching assistant who drops below 9

hours in a semester may have their position and assistantship immediately revoked. Such students will be ineligible for future funding.

12 Qualifying Exams

Students are expected to pass three qualifying exams prior to the start of their sixth semester. Students must attempt three exams prior to the start of their fifth semester. A grade of Fail on an exam may put funding in jeopardy. PhD students who receive grades below PhD Pass on more than two exams will be dismissed from the program.

13 Teaching and Tutoring Evaluations

Each Graduate Teaching Assistant will be evaluated each semester by a member of the Graduate Studies Committee. Satisfactory faculty evaluations are necessary for reappointment. If applicable, satisfactory reports from the director of the Math Help Center are necessary for reappointment.

14 Progress on Research

The dissertation supervisor will provide a report to the Graduate Director and the Department Head. All students must continue to make progress towards the degree.

15 Colloquia and Lecture Series Talks

All graduate students are expected to attend all colloquia and lecture series talks. Students should also attend seminars in their discipline. Unexcused absences from colloquia and lecture series talks may result in loss of funding. Students should also take every available opportunity to give talks, both at UNCG and at regional conferences. There is usually funding to support graduate student attendance at most conferences.

16 Time Limits

Two sets of time constraints are enforced for PhD students. The first deadline concerns Graduate Teaching Assistants and continuation of funding. The second set of deadlines concerns Graduate School limits. While failure to adhere to the departmental timelines may result in discontinuation of funding, the Graduate School's deadlines cannot be circumvented and failure to adhere to these guidelines will result in inability to graduate.

16.1 Continued Departmental Support

Students seeking funding beyond the fifth year of enrollment in the program must have their dissertation supervisor submit an application to extend funding to the Graduate Director and the Department Head. Funding beyond the fifth year will be granted only in cases when the dissertation is nearing completion and sufficient funding is available.

16.2 Graduate School Time Limits

The Graduate School requires that all courses that appear on the student's Plan of Study must have been completed within seven years of the granting of the degree. For students admitted to the PhD program directly from a baccalaureate program, the limit is ten years.