Department of Mathematics and Statistics

GRADUATE STUDENT HANDBOOK

For

Graduate Programs in Mathematics

Updated on August 31, 2026

1 Introduction

The Department of Mathematics and Statistics (DMS) offers graduate programs leading to the following degrees:

- Master of Science in Mathematics (MS-MATH, thesis)
- Master of Applied Mathematics (MAM, non-thesis)
- Master of Science in Statistics (MS-STAT, non-thesis)
- Master of Data Science and Engineering (MS-DSE, non-thesis)
- Doctor of Philosophy in Mathematics (PhD in Math)
- Doctor of Philosophy in Statistics and Data Science (PhD in Stat and Data Science)

Graduates of these programs have gone on to successful careers in business, government, and academia.

This handbook covers the mathematical degree programs: MS-MATH, MAM, and PhD in Mathematics. A separate handbook is available for the statistics and data science programs: MS-STAT, MS-DSE, and PhD in Statistics and Data Science.

The department offers a diverse and rich learning environment. There are several weekly research seminars and colloquia. Graduate students are expected to participate in these. The department rewards high-achieving graduate students through various awards and fellowships. Moreover, funding for participation in conferences is available from the department, the College of Sciences and Mathematics, and the Graduate School. This handbook serves as a supplement to the requirements outlined by the Graduate School, not a replacement. You can access the Graduate Student Handbook through the following link: Graduate Student Handbook. The student must be familiar with and adhere to the requirements for their graduate degree. In cases where this handbook conflicts with Graduate School policy, the Graduate School policy will prevail. Please report errors in this handbook to the DMS Graduate Program Officer (GPO).

To stay on track with graduation, you will find the following Graduate School website very useful.

https://graduate.auburn.edu/current-students/academic-resources/on-track-graduation.php?utm_source=Graduate-School&utm_medium=web

You can also check our department website, "Math Graduate Program," for much of the content of this handbook. This handbook can also be found on this website.

2 Degree Requirements for Doctoral Students

The main requirements for Ph.D. students are (1) to complete the course work specified in an approved plan of study, (2) to pass a general doctoral examination, consisting of prelims and an oral exam, (3) to conduct independent research and write a dissertation, and (4) to pass a final doctoral examination.

2.1 Advisory Committee and Plan of Study

As soon as feasible after enrollment in the Ph.D. program, the student should ask a DMS faculty member to serve as their advisor (major professor). In consultation with the Department Chair and GPO, the student and advisor will select an advisory committee consisting of at least four Auburn University Graduate Faculty members, including the advisor as chair. The advisor needs to be a level-2 member of the DMS Graduate Faculty; at least two additional committee members must be level-2 members of the AU Graduate Faculty. The student will work with the advisory committee to develop a plan of study. This process should occur no later than during the second year of enrollment in the Ph.D. program.

Plan of Study Requirements for Ph.D. students:

1. At least 60 hours in total.
2. At least 30 hours at Auburn.
3. Two hours of MATH-7950-001, Graduate Student Seminar, in the first year.
4. The number of hours that can be transferred is unlimited.
5. Must count at least 10 hours of MATH-8990 for the dissertation.
6. At least 30 of the hours must be graded coursework (A, B, C, D, F).
7. At most 4 hours of a Master's Thesis can be used.

Once the committee is selected, the student needs to complete and submit the Committee, Transfers, Exceptions, and Candidacy (CTEC) Form. The CTEC Form will require all committee members' Auburn University email addresses and the full email addresses of any outside committee members and their CVs. The form includes some helpful tips about the validation process. CTEC form must be submitted before taking the general oral examination.

When submitting the CTEC form, you will be prompted to include any transfer courses or curriculum exceptions/substitutions.

The Graduate School will be notified when the form is submitted. Complete information is required to initiate the process.

Further information regarding the committee selection form can be found on the CTEC Form FAQ page.

2.2 Preliminary requirements

All Ph.D. students must pass two departmentally administered written examinations ("preliminary examinations" or "prelims"). A failed prelim in any subject may be repeated. Students may not repeat a prelim more than once, and no more than three failed prelims are allowed in all. In addition, Ph.D. students in mathematics must pass (with a grade of B or above) two additional year-long prelim sequences, while Ph.D. students in mathematics with statistics concentration must take 15 credit hours from a selected list of courses.

To retain financial support from the department, a student must pass the two prelim exams from each group (listed below) by the end of their second year in the graduate program. By the end of the third year in the graduate program, Ph.D. students in mathematics must meet the two additional prelim sequences requirement, and Ph.D. students in mathematics with statistics concentration must meet the 15 credit hour requirement. To remain enrolled in the graduate program, a student must meet all the prelim requirements by the end of the fourth year. (A Ph.D. student who entered the graduate program at Auburn as a master's student is allowed an additional year to meet each of the above requirements).

Prelim requirement for Ph.D. in Mathematics

- Pass one preliminary exam in

Group 1

- Real Analysis I/II (MATH 7200/7210)
- Functions of a Complex Variable I/II (MATH 7230/7240)
- Functional Analysis I/II (MATH 7400/7410)
- Algebra I/II (MATH 7310/7320)
- Matrices I/II (MATH 7370/7380)
- Topology I/II (MATH 7500/7510)
- Axiomatic Set Theory I/II (MATH 7150/7160)
- Discrete Geometry and Convexity I/II (MATH 7110/7120)
- Graph Theory (MATH 7700/7750)
- Combinatorial Designs (MATH 6770/7740)

- Pass one preliminary exam in

Group 2

  - Numerical Analysis (any two of MATH 7600/7610/7630)
  - Applied Mathematics (MATH 7000/7010)
  - Computational and Applied Algebra (any two: MATH 7180/7190/7720/7730)
  - Probability I/II (MATH 7800/7810)
  - Applied Stochastic Processes I/II (MATH 7820/7830)
  - Partial Differential Equations I/II (MATH 7440/7450)
  - Advanced Theory of Ordinary Differential Equations I/II (MATH 7280/7290)
  - Statistical Inference (STAT 7600/7610)
- Take and pass (with a grade of B or above) two additional year-long prelim sequences from the combined list of course sequences in Groups 1 and 2.

Ph.D. in Statistics and Data Science (Please see the Statistics Handbook for details)

- Pass the preliminary exam on theory and inference (STAT 7600/7610)
- Pass the preliminary exam on method and computation (STAT 7020/7650/7840)
- Take at least 12 credit hours from the courses below.
  - MATH 7620 Optimization Theory
  - MATH 7800/7810 Probability I/II (one or both)
  - MATH/STAT 7820/7830 Applied Stochastic Processes I/II (one or both)
  - STAT 7630 Bayesian Statistics
  - STAT 7700 Generalized Linear Models
  - STAT 7800 Linear Models
  - STAT 7860 Applied Time Series Analysis
  - STAT 7850 Theory of Statistical Inference

Each prelim is based on the material covered in a two-semester sequence in mathematics (or two-semester courses in statistics) of graduate-level courses.

Students are not required to take the respective course sequence before attempting a prelim. With the approval of their advisory committee, a student may petition the Graduate Studies Committee to approve any two-semester sequence of graduate-level courses to meet the prelim requirement of a Prelim Group specified by the student's committee. All preliminary examinations are departmentally administered, usually in **April/May** or **August**.

2.3 General Doctoral Examination

The general doctoral examination consists of written and oral testing in the student's field of study by the student's advisory committee. The purpose of the examination is to test the student's mastery of the broad body of knowledge in the chosen field, to review the proposed independent research, and to assess the student's grasp of the relevant research methods and literature. Prelim exams are normally counted as the written portion of the general doctoral examination. (The student's advisory committee is free to require an additional written exam.) The student's advisory committee conducts the oral portion of the general doctoral examination in accordance with pertinent graduate school regulations. Upon successfully completing the examination, the student becomes a doctoral candidate. As stated in Section 2.1, submission and approval of the CTEC form are required to access the application for the General Oral Exam.

2.4 Dissertation and Final Doctoral Examination

Every Ph.D. student is required to write a doctoral dissertation based on independent and original research in the chosen field of study, conducted under the direction of the student's advisor. The final doctoral examination (generally oral) occurs after the Graduate School approves a draft of the dissertation. The examination, which includes general testing in the student's field of study and a defense of the dissertation, is conducted by the student's advisory committee. A representative of the Graduate School (the "outside reader") participates.

3 Degree Requirements for Master's Degree Students

The main requirements for Master's degree students are (1) to complete the course work specified in an approved plan of study, (2) to carry out a research project (and write a thesis if required), and (3) to pass a comprehensive final examination.

3.1 Advisory Committee and Plan of Study

As soon as feasible after enrollment in a Master's degree program, the student should ask a DMS faculty member to serve as their advisor (major professor). Upon recommendation by the advisor, the Department Chair will appoint an advisory committee, normally consisting of three faculty members, including the advisor as chair. The student will work with the advisory committee to develop a plan of study and submit it to the Graduate School for approval. This process should occur during the first semester of enrollment in the Master's degree program.

Plan of Study Requirements for Master's students:

1. At least 30 hours in total.
2. Can transfer up to 6 hours.
3. Required Project or Thesis:
    a. MS-MATH: At least 4 hours of Master's Thesis (MATH-7990); can count up to 6 hours for thesis (may register for more than 6 hours if necessary).
    b. MS-STAT: At least 3 hours of Master's Project(STAT-7990).
    c. MAM: At least 3 hours of Master's Project (MATH-7980); can register for more than 6 hours if necessary.
    d. MS-DSE: 3 hours of Capstone Project (STAT-7940)
4. Can count at most 6 hours of a previous master's degree.
5. The plan of study (CTEC form) must be filed no later than the semester before graduation.

Some degrees have required courses. Details on these can be found at
http://www.auburn.edu/academic/cosam/departments/math/students/grad/
Once the committee is selected, the student needs to complete and submit the Committee, Transfers, Exceptions, and Candidacy (CTEC) Form. The CTEC Form will require all committee members' Auburn University email addresses, and the full email addresses and their CVs of any outside committee members. The form includes some helpful tips about the validation process. When submitting the CTEC form, you will be prompted to include any transfer courses or curriculum exceptions/substitutions. The Graduate School will be notified when the form is

submitted. Complete information is required to initiate the process. Further information regarding the committee selection form can be found on the CTEC Form FAQ page.

The recently established Master's in Data Science and Engineering Program may have different degree requirements. Check the program website https://www.auburn.edu/cosam/dse/ for details.

3.2 Research Project (and Thesis, if Required)

Every Master's degree student will carry out a research project under the direction of their advisor. Depending on the degree option, the student may or may not be required to write a thesis based on the Mathematics and Statistics results of the completed research project. The Master of Science degree requires a thesis; the Master's degrees in Applied Mathematics, Statistics, and Data Science and Engineering do not require a thesis.

3.3 Final Examination

Every Master's degree student, except students enrolled in the Master's in Data Science and Engineering degree, must pass a comprehensive final examination. This is an oral examination, conducted by the student's advisory committee and covering the student's course work in the chosen field of study as well as their research project (and thesis, if applicable). The student's advisory committee may also require a written examination.

4 Changing from Master's to PhD

The procedure for changing the classification from Master's to Ph.D. includes getting support letters from two faculty members (master's advisor and, preferably, a potential Ph.D. advisor)

The application is submitted to the GPO, who will present it to the Graduate Studies Committee for approval. Once approved, the GPO informs the student to fill out the curriculum change form (https://gradforms.auburn.edu/CurriculumChangeDomestic.aspx for domestic students, https://gradforms.auburn.edu/CurriculumChangeIntl.aspx for international students.)

5 Time Limits

All Ph.D. students are expected to achieve candidacy within six years. All graduate work must be completed within six calendar years for a Master's degree and ten calendar years (or a maximum of 4 calendar years after advancement to candidacy) for the Ph.D. With the approval of the major professor and committee, a student failing to complete the requirements on time can petition the dean of the Graduate School for an extension.

Suggested Timelines for the PhD Graduate Program In Mathematics

Ph.D. in Mathematics (5–6 years)

Year	Milestone/Activity
Year 1	Begin coursework (core and electives); attend seminars; identify research interests and potential advisors; prepare for and pass preliminary exams (first attempt)
Year 2	Complete coursework; prepare for and pass preliminary exams (first or second attempt); update Plan of Study; confirm dissertation topics and advisor(s), form advisory committee; submit initial Plan of Study (CTEC form); prepare/pass General Oral Exam (to enter candidacy)
Year 3	Pass General Oral Exam (enter candidacy); begin dissertation research
Year 4	Conduct research and draft dissertation; present at conferences
Year 5	Finalize dissertation; submit to Graduate School; defend dissertation; graduate

6 Graduate Teaching Assistantship

Financial aid, usually in the form of graduate teaching assistantships (GTAs), is available on a competitive basis for Ph.D. students in good academic standing. Except on rare occasions, we do not provide support to Master's students.

Appointment: Students are selected based on academic performance, knowledge of the specific subject matter, and ability to communicate effectively in English in a classroom environment. Students whose native language is not English are expected to pass the Test of Spoken English (TSE) or graduate-school approved equivalent before being entrusted with teaching duties. GTAs are typically appointed at level 0.33 FTE or 0.50 FTE. GTAs appointed at 0.33 FTE are required to teach eight credit hours of courses during the regular academic year of appointment or to perform comparable duties, such as grading or tutoring. Correspondingly, GTAs appointed at 0.50 FTE are required to teach twelve credit hours of courses during the regular academic year of appointment or to perform comparable duties. GTAs are expected to be in Auburn throughout the academic year to perform their duties and participate in departmental scholarly activities.

Reappointment: Appointments are renewed on an annual basis. Reappointment is contingent upon the adequate performance of duties and normal progress towards a graduate degree. A graduate student is normally expected to complete eighteen semester credit hours of graduate-level coursework towards the degree during their first year in the program and at least twelve hours in each subsequent year until all coursework specified in the student's approved plan of study is completed. GTAs are expected to successfully complete the GTA Training Seminar (MATH-7950-002) in the Spring semester of the first year and fall semesters of their second year.

Withdrawal of Funding: Students who lose funding because of poor performance will not have their funding automatically restored even if their performance improves. The department can withdraw funding during the academic year due to poor performance as a teaching assistant, as determined by faculty, supervisor, and student evaluations. Students who lose funding must re-apply for funding by contacting the GPO.

Time Limits: The department normally expects students to complete a master's degree program within two years and the doctoral degree program within six years; students starting at the master's level and continuing at the doctoral level should be able to complete both programs within seven years. Graduate teaching assistantships are usually awarded only

within these time limits, i.e., the GTA support will be stopped after six years. Upon consideration by the Graduate Studies Committee, exceptions may be granted but will depend on several factors, including progress towards a degree, departmental needs, and availability of funds. Continuation in a degree program does not require continued employment as a GTA, but certain benefits, such as tuition waivers, may not be available to graduate students without GTA appointments.

Summer Appointments: Summer employment is contingent upon the availability of funds and cannot be guaranteed. Graduate students are selected for summer teaching based on their performance as GTAs and their academic progress and achievements.

Benefits: Funding normally consists of a 9-month monthly stipend and a full tuition waiver for those appointed at 0.33 FTE or higher. Doctoral students receive a tuition waiver for up to 75 credit hours, and master's degree students receive a tuition waiver for up to 38 credit hours. Graduate assistants who have received a 0.33 FTE or higher assistantship for two semesters of a given academic year and are not on assistantship for the third semester will receive tuition support during that corresponding third semester.

GTAs on Academic Probation/Suspension: Graduate Students are placed on academic probation by the Graduate School once their cumulative GPA falls below 3.0 during a semester. Probation starts on the first day of the next semester and ends on the last day of the semester, at the end of which the cumulative GPA is at least 3.0. Students on probation are not eligible for a tuition waiver (except for the out-of-state portion). If a student remains on academic probation for two semesters or after completing 11 credit hours of studies (whichever comes first), the student will be placed on academic suspension by the Graduate School. Students on academic suspension cannot hold a GTA appointment. Probation and suspension will also impact graduate students' financial support from the Department:

1. Students who have been placed on academic suspension will not be eligible for financial support by DMS for the remainder of their studies.
2. Students on academic probation, who are already receiving financial support from the department, will be placed on a 1/3 FTE appointment and cannot be the instructor of record during the time they are on probation. They are also not eligible for summer support, travel support, or GRA support for 12 months after they were put on probation.
3. Students on academic probation, who are not receiving financial support from the department, cannot apply for financial support while on probation.

4. Any student who has been placed on academic probation twice is not eligible for continued financial support from the department. If a student is already receiving financial support, this support will stop at the end of the semester, during which the cumulative GPA falls below 3.0 for a second time.

7 Official Communication

Communications regarding departmental and university events, academic affairs, and other matters of interest to graduate students are conducted in several formats. However, the official means of communication at Auburn is e-mail. All students are responsible for checking their Auburn University–issued e-mail account on a regular basis. Students should check their email year-round.

All GTAs are also assigned mailboxes in the departmental main office. These too should be checked regularly.

Some information will also be communicated verbally by major professors, the GPO, the GTA supervisor, or the Department Chair. These should be followed up in a timely manner.

Finally, students should always feel free to approach the GPO, Department Chair, GTA Supervisor, and the faculty advisor with any questions about the program or their work. While fostering a friendly environment where students can interact openly and easily with faculty is important, students should remember that professors have other responsibilities and sometimes cannot meet them immediately.

Department of Mathematics and Statistics

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