University of Idaho

DEPARTMENT OF MATHEMATICS
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Graduate Student Handbook

Department of Mathematics and Statistical Science

University of Idaho

2025-2026

Degrees Offered

MAT

The MAT degree provides an education on topics in mathematics relevant to the teaching of mathematics in elementary and secondary schools, covered at a significantly higher and deeper level than a Bachelor of Science in Education degree program. It also aims to develop skills in learning new mathematics and solving mathematical problems. The MAT degree prepares students for secondary teaching (additional state certification may be required) and for some community college positions. We offer this degree on campus and by distance learning.

MS in Mathematics

The MS degree provides an advanced education in modern pure and applied mathematics covering foundational notions in most major areas of current research. Students can select courses based on their interests and plans. The MS degree prepares students to enter a PhD program, for some teaching positions in higher education, particularly at community colleges, and for positions in government and industry. Most students complete our non-thesis MS program in two years.

PhD in Mathematics

The PhD degree provides a solid foundation in the major areas of modern mathematics, including the common knowledge traditionally shared by all professional mathematicians, and a deep understanding of the nature of mathematical research through personal experience in planning, executing, and presenting the results of a substantial original research project. Graduates are expected to be capable of continuing independent original research. A PhD is generally required for teaching and research at the university level and prepares students for research positions in government and industry.

Research opportunities exist in a wide range of areas of foundational and applied mathematics. For example, we have expertise in a variety of areas of analysis and algebra, combinatorics, probability and differential equations, including applications to other fields such as biology.

The University of Idaho has strong departments of biology, computer science, and several engineering disciplines that complement our mathematics programs, providing opportunities for interdisciplinary training that is relevant to positions in scientific and industrial enterprises. Several of our faculty and graduate students participate in the University's interdisciplinary PhD program in Bioinformatics and Computational Biology.

MS in Statistical Science

The MS degree provides an advanced education in Statistics. Students follow one of three different tracks: a thesis option, non-thesis research option, and a non-thesis internship option. These tracks provide flexibility in meeting student academic and career goals. The objective is to provide sound training in the fundamental principles and techniques of statistics. The MS degree equips students for a variety of statistical careers in industry, business, natural resources, agriculture, and government, or to engage in further study at the doctoral level.

Admission

Application Process

To become a graduate student, you must be admitted both to the College of Graduate Studies and to the Department of Mathematics and Statistical Science.

To find out more about gaining admission to the College of Graduate Studies, please visit the Graduate Admissions Website.

Requirements

- TOEFL/IELTS: 79/6.5.
- GPS: 3.0.
- GRE: No.
- Official transcripts for all undergraduate and graduate work. Unofficial transcripts may be used to review your application and offer tentative admission.
- There is an application fee of $50 for all applicants. The department cannot waive this fee.
- GRE (Graduate Record Exam) scores are not required.
- Three letters of reference from persons who know enough about your academic abilities to evaluate your potential for graduate studies.
- One to two page resume/curriculum vitae.
- One to two page statement of purpose.

Submit application materials online at:

https://www.uidaho.edu/admissions/graduate/graduate-programs

Once you have met the minimum requirements, the College of Graduate Studies forwards your information to the department. You will also be considered for a Teaching Assistantship (TA) at this time if you have filled out the TA application which is part of the online application.

Note: While Graduate Admissions has priority deadlines for applications to receive full consideration, the department does accept applications throughout the year.

MAT Applicants

MAT applicants must have completed an acceptable calculus sequence; it is desirable that they have taken mathematics courses beyond calculus. Since it is a primary goal of the distance-learning MAT to improve the training of K-12 students by refreshing and extending the mathematical training of practicing teachers, the standards of admission may be relaxed.

MS in Mathematics Applicants

MS applicants are generally expected to hold a baccalaureate degree in mathematics that includes sufficient training in algebra and analysis to begin graduate course work. Exceptions to this expectation may be made on recommendation of the Mathematics Graduate Committee, but it shall

ordinarily be possible for any full-time student admitted to the MS program to complete the degree requirements in two years.

PhD in Mathematics Applicants

A PhD applicant must hold an MS or a strong baccalaureate degree in mathematics, although other backgrounds will be considered on recommendation of the Mathematics Graduate Committee. Successful applicants will have a strong record that suggests high potential for mastering foundational areas of modern mathematics and completing a substantial original research project.

Students completing a master's degree at the UI who wish to gain admission to the PhD program are required to apply internally for admission, as specified in the Mathematics Departmental Procedures Manual.

MS in Statistical Science Applicants

Students from all areas of study are considered, but they are required to have completed at least two semesters of calculus comparable to Math 1170 and 1175 at UI, and at least six semester hours of statistics (including Stat 4310: Statistical Analysis, or its equivalent). Familiarity with programming is expected, and familiarity with numerical or statistical computing environments is desirable.

MAT Degree Requirements

The MAT is a non-thesis degree requiring 30 credits of coursework and a 3-hour comprehensive MAT exam. The degree is offered both on campus and by distance learning through Idaho Engineering Outreach. It is designed primarily for certified teachers who wish to strengthen their subject matter preparation. (Receiving this degree does not give certification in high school teaching.) In some cases, the MAT may qualify students to teach at some community colleges. If you are interested in this possibility, we recommend that you inquire with colleges at which you might be interested in teaching to see if they acknowledge the MAT as appropriate preparation.

For information about available distance courses, and fees for distance courses, visit the Engineering Outreach website .

All requirements for the degree may be completed by distance -- it is not necessary to come to the University of Idaho campus to complete any part of this degree program.

The College of Graduate Studies requires students to maintain a 3.0 cumulative GPA.

MS in Mathematics Degree Requirements

Coursework

The degree requires 30 credits of coursework. At least 18 credits must be in mathematics at the graduate level (excluding MATH 5000, 5990, seminars, and directed study). The other 12 credits may include 4000-level and 5000-level courses in mathematics, and 3000-level or 4000-level courses in supporting areas as approved by the student's major professor or the graduate committee. Coursework in mathematics education (i.e., courses with a MTHE prefix) may not be counted.

In addition to the required coursework, students must satisfy the requirements of the thesis or non-thesis option.

Thesis Option

The thesis option requires a thesis and defense. Acceptability of the thesis and passing of the defense is determined by the student's major professor and thesis committee.

Non-Thesis Option

The non-thesis option requires a comprehensive written examination. The examination covers six mathematics courses selected by the student, with at least five of those courses at the graduate level. The courses must be approved by the mathematics graduate committee. The examination will typically be three hours in duration. Students will have, at most, two attempts to pass the examination. A student may get credit for passing the MS comprehensive examination by passing two PhD preliminary examinations at the "master's level." If a student fails the examination, they will have one opportunity to retake the examination. The examination can be retaken only once, and the interval before the second attempt cannot be less than three months or longer than one year. If a student fails the comprehensive examination twice or does not retake it within one year of a failure, the student is no longer in the degree program.

PhD in Mathematics Degree Requirements

Coursework

Students must complete 36 credits (12 courses) of graduate-level mathematics (excluding MATH 5000, MATH 5100, MATH 6000, seminars, and directed studies), or related areas as approved by the candidate's committee. These may include graduate courses taken for the M.S. degree.

Students with prior graduate work at another university must take at least 18 credits (6 courses) at the University of Idaho.

All students must take two graduate-level courses in algebra and two graduate-level courses in analysis and earn a grade of B or better in all four courses.

Students are required to complete a minimum of 78 credits beyond the Bachelor of Science degree: however, that number can include Math 5000, 5990, 6000, seminars, and directed study, as well as 400 level math courses and some supporting courses from outside mathematics.

Preliminary Examination

Students must pass a preliminary examination.

The preliminary examination is composed of two sections. Each section will test a different subject area. At least one of those areas must be algebra or analysis. The other area must be agreed upon with the approval of the mathematics graduate committee. The two sections of the examination will each be four hours, to be administered during the same week, but not on the same day.

The preliminary examination should be taken as soon as the student has sufficient preparation in the chosen subject areas and no later than the start of the student's third year in the program.

A student may be granted a partial or conditional pass, with a requirement that they complete further coursework or retake a portion of the exam. If a student does not pass the exam, they may request to have a second attempt, which should be taken no later than the end of their third year in the program. In extraordinary circumstances, the deadline may be extended via petition supported by the student's major professor, or by the chair of the graduate committee if the student has not yet identified a major professor.

Qualifying Examination

Students must pass a qualifying examination. The purpose of the qualifying examination is for the student to demonstrate readiness to begin research for their dissertation.

The format of the examination is determined by the student's doctoral thesis committee. The committee will decide if the student passes the examination, fails but is permitted to retake the examination, or fails and is not permitted to retake the examination.

The qualifying examination will usually be taken within a year of passing the preliminary exam and must be passed no later than the beginning of the student's fourth year in the program. In extraordinary circumstances, the deadline may be extended via petition supported by the student's doctoral thesis committee

Dissertation

The dissertation should contain original research and constitute a significant contribution to knowledge in the student's area of study. Completion of the dissertation also requires an oral defense. Acceptability of the dissertation and passing the defense are determined by the student's major professor and dissertation committee.

MS in Statistical Science Requirements

Coursework

Students must complete 30 credits of coursework. This includes Stat 4220 (Survey Sampling Methods), 4510 (Probability Theory), 4520 (Mathematical Statistics), 5010 (Seminar), 5070 (Experimental Design), 5190 (Multivariate Analysis), 5500 (Regression), and Stat 5650 (Computer Intensive Statistics). Substitutions or waivers of required courses must be approved by the graduate committee. Supporting courses in other disciplines (e.g., mathematics or computer science) may be included in student study plans with the permission of their major professor or the graduate committee.

In addition to coursework, students must complete a thesis or one of two non-thesis options: research or internship.

Thesis Option

A thesis is appropriate for students to engage in potentially publishable research and is recommended for students planning to pursue a higher degree. The thesis is based on research approved by their major professor and requires an oral defense. Acceptability of the thesis and passing the defense are determined by the student's major professor and the thesis committee.

Non-Thesis Research Option

The non-thesis research option is suitable for students who are engaged in research under the supervision of one or more faculty in the department. The specific requirements that the student must meet to satisfy this option are at the discretion of their major professor.

Non-Thesis Internship Option

The non-thesis internship option is suitable for students who are working as statisticians under the supervision of one or more people outside the department. These individuals may be within other units at the university, or outside the university. Before starting an internship, it must be reviewed and approved by the internship coordinator. A written report and supervisory feedback are also required.

Evaluation of Graduate Student Progress

In the spring semester of each year, the mathematics and statistics graduate faculty will meet to review the progress of graduate students toward their degree and to evaluate the teaching performance of Teaching Assistants (TAs). In particular, the faculty will make one of the following recommendations, based on progress towards the degree and performance in teaching duties, for each Teaching Assistant:

1. Automatically renew the TA position.
2. Withdraw the TA position for the following year. In this case, the TA may apply for reinstatement, and this application will be considered along with other TA applications for the following year.
3. Deny renewal of the TA position. This action, if due to unsatisfactory progress towards the degree, may be accompanied with a Warning or Dismissal from the graduate program.

The status of students without departmental funding will be governed by the College of Graduate Studies' rules and regulations. Furthermore, the department chair may meet with the student or draft a report on the student's progress based on faculty comments.

Teaching Assistantships

Teaching Assistantships in mathematics and statistics are available to full-time students working on the M.S. or Ph.D. in Mathematics or M.S. in Statistical Science.

The Department of Mathematics and Statistical Science is strongly committed to helping its Teaching Assistants (TAs) become exemplary teachers as well as strong mathematicians and statisticians. New TAs are generally assigned to assist or teach various undergraduate Math and Statistics courses. TAs may also be assigned hours to work as a tutor in the Math Assistance Center (MAC) or Statistics Assistance Center (SAC).

Teaching Assistantships come with an annual stipend and a waiver of in-state and out-of-state tuition. Teaching Assistantships are awarded for an academic year but are automatically renewed for those who do a good job and make satisfactory progress toward their degree.

There is no definite closing date for reviewing applications, but chances of receiving a Teaching Assistantship are better if the department receives the application by September 1st for the spring semester or February 1st for the fall semester. Typically, new TA positions begin in the fall semester.

Expectations of Teaching Assistants

A Teaching Assistantship is a paid position for 20 hours of work per week. Your assigned duties, which include teaching a lower-level course, as well as serving as a tutor in in the Math Assistance Center (MAC) or Statistics Assistance Center (SAC), will likely take you close to 20 hours of work per week on average, with some weeks requiring more than 20 hours. If you find your duties consistently taking more than 20 hours per week of work, please consult with the Department Chair or other faculty.

Your position each semester begins the week before classes start and ends with the submission of final grades after final exams. You are expected to be in town and available throughout this period, with possible rare exceptions for travel to academic conferences or short research visits to other institutions. During the week before a semester starts you should be available for meetings as well as working to plan your teaching for the semester. Teaching Assistant Training is held by the College of Graduate Studies during this week, and new TAs are **required** to attend.

All new international Teaching Assistants are also required to register for a one-credit pass/fail course called INTR 5080/01: International TA Teaching Strategies. INTR 5080 is a hybrid course that partially includes five in-person meeting days.

A teaching assistantship is a professional position which also serves as training for future work independently teaching college courses. As such, you are expected to abide by professional norms, including

- Being punctual to class and designated office hours.
- Being prepared for class with plans for instructional activities expected to take the full amount of class time.

- Setting appropriate homework and reading assignments, projects, quizzes, and or exams for students
- Within reasonable expectations for your time, being available outside of class to help students learn material outside, especially during scheduled office hours
- Upholding reasonable academic standards for your students, including standards against cheating and plagiarism
- Communicating course policies and expectations to your students
- Returning graded work within a reasonable amount of time
- Submitting early warning, midterm, and final grades before deadlines
- Behaving respectfully towards your students and other instructors
- Treating students fairly and equitably
- Abiding by University policy, including policies on ethics, academic honesty, consensual relationships, and privacy of student records

If you know you will need to miss class for some reason, you are responsible for making arrangements for someone to cover your class. If you have difficulty finding another graduate student to help, faculty can be surprisingly helpful, particularly if they also need someone to cover their class at some other time during the semester. If you find yourself unable to meet your class at short notice because of illness or some other emergency, you must let the Math and Statistics Office know as soon as possible that you are cancelling class. You should also communicate the cancellation directly to your students if possible.

In addition to teaching and related duties, you are also expected to

- Attend the Mathematics Colloquium (Math students).
- Maintain at least 9 credits of course work per semester in relevant subjects, including directed studies and research credits.

It can be a challenge balancing your teaching duties, your studies including any coursework, your research, and your personal life. This is challenge academics must handle throughout their careers. You should feel free to ask your advisor or other members of the faculty for advice.