DOCTOR OF PHILOSOPHY IN MATHEMATICS

The Department of Mathematics offers a Doctor of Philosophy (PhD) Program that prepares students to pursue successful research careers as professional mathematicians in academia, industry, government labs, or the financial sector. It provides a rigorous and thorough education, under a very dynamic and interactive environment, aimed at preparing our students to assume leadership positions as researchers in academia, industry, government labs and similar settings. Our students conduct research on one of the several areas that represent the diversity and scope of our faculty's expertise.

Program graduates gain broad exposure to graduate-level mathematics, as well as thorough experience in mathematical research. They leave with extensive training and in-depth knowledge in an area of specialization. The program also provides internship opportunities, an array of research seminars, working seminars, and teaching experiences for the students. All graduates produce a final dissertation consisting of original work that clearly represents a relevant contribution to the advancement of the corresponding field of study. The current need for employees with strong skills in Science, Technology, Engineering, and Mathematics (STEM) is well-documented, and our program prepares students to take on a wide variety of such jobs. In particular, our students develop both the technical prowess and high ethical standards required to become effective STEM leaders in academia and industry.

Steps to Fulfill a Doctoral Program (http://catalog.tamu.edu/graduate/academic-expectations-general-degree-requirements/#stepstofulfilladottoralprogramtext)

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Student’s Advisory Committee

After receiving admission to graduate studies and enrolling, the student will consult with the head of their major or administrative department (or chair of the intercollegiate faculty) concerning appointment of the chair of the advisory committee. The student’s advisory committee will consist of no fewer than four members of the graduate faculty representative of the student’s several fields of study and research, where the chair or co-chair must be from the student’s department (or intercollegiate faculty, if applicable), and at least one or more of the members must have an appointment to a department other than the student’s major department. The outside member for a student in an interdisciplinary degree program must be from a department different from the chair of the student’s committee.

The chair, in consultation with the student, will select the remainder of the advisory committee. Only graduate faculty members located on Texas A&M University campuses may serve as chair of a student’s advisory committee. Other Texas A&M University graduate faculty members located off-campus may serve as a member or co-chair (but not chair), with a member as the chair.

If the chair of a student’s advisory committee voluntarily leaves the University and the student is near completion of the degree and wants the chair to continue to serve in this role, the student is responsible for securing a current member of the University Graduate Faculty, from the student’s academic program and located near the Texas A&M University campus site, to serve as the co-chair of the committee. The Department Head or Chair of Intercollegiate faculty may request in writing to the Associate Provost and Dean of the Graduate and Professional School that a faculty member who is on an approved leave of absence or has voluntarily separated from the university, be allowed to continue to serve in the role of chair of a student’s advisory committee without a co-chair for up to one year. The students should be near completion of the degree. Extensions beyond the one year period can be granted with additional approval of the Dean.

The committee members’ signatures on the degree plan indicate their willingness to accept the responsibility for guiding and directing the entire academic program of the student and for initiating all academic actions concerning the student. Although individual committee members may be replaced by petition for valid reasons, a committee cannot resign en masse. The chair of the committee, who usually has immediate supervision of the student’s research and dissertation or record of study, has the responsibility for calling all meetings of the committee. The duties of the committee include responsibility for the proposed degree plan, the research proposal, the preliminary examination, the dissertation or record of study and the final examination. In addition, the committee, as a group and as individual members, is responsible for counseling the student on academic matters, and, in the case of academic deficiency, initiating recommendations to the Graduate and Professional School.

Degree Plan

The student’s advisory committee will evaluate the student’s previous education and degree objectives. The committee, in consultation with the student, will develop a proposed degree plan and outline a research problem which, when completed, as indicated by the dissertation (or its equivalent for the degree of Doctor of Education or the degree of Doctor of Engineering), will constitute the basic requirements for the degree. The degree plan must be filed with the Graduate and Professional School prior to the deadline imposed by the student’s college and no later than 90 days prior to the preliminary examination.

This proposed degree plan should be submitted through the online Document Processing Submission System located on the website http://ogsdpss.tamu.edu (http://ogsdpss.tamu.edu/). A minimum of 64 hours is required on the degree plan for the Doctor of Philosophy for a student who has completed a master’s degree. A student who has completed a DDS/DMD, DVM or a MD at a U.S. institution is also required to complete a minimum of 64 hours. A student who has completed a baccalaureate degree but not a master's degree will be required to complete a 96-hour degree plan. Completion of a DDS/DMD, DVM or MD degree at a foreign institution requires completion of a minimum of 96 hours
for the Doctor of Philosophy. A field of study may be primarily in one department or in a combination of departments. A degree plan must carry a reasonable amount of 691 (research). A maximum of 9 hours of 400-level undergraduate courses may be used toward meeting credit-hour requirements for the Doctor of Philosophy.

Additional coursework may be added by petition to the approved degree plan by the student’s advisory committee if it is deemed necessary to correct deficiencies in the student’s academic preparation. No changes can be made to the degree plan once the student’s Request for Final Examination is approved by the Graduate and Professional School.

Approval to enroll in any professional course (900-level) should be obtained from the head of the department (or Chair of the intercollegiate faculty, if applicable) in which the course will be offered before including such a course on a degree plan.

No credit may be obtained by correspondence study, by extension or for any course of fewer than three weeks duration.

For non-distance degree programs, no more than 50 percent of the non-research credit hours required for the program may be completed through distance education courses.

To receive a graduate degree from Texas A&M University, students must earn one-third or more of the credits through the institution’s own direct instruction. This limitation also applies to joint degree programs.

Transfer of Credit

Courses for which transfer credits are sought must have been completed with a grade of B or greater and must be approved by the student’s advisory committee and the Graduate and Professional School. These courses must not have been used previously for another degree. Except for officially approved cooperative doctoral programs, credit for thesis or dissertation research or the equivalent is not transferable. Credit for “internship” coursework in any form is not transferable. Credit for coursework taken prior to the conferral of a degree at the transfer institution, a letter from the registrar for graduate credit. If the course to be transferred was taken prior to the semester following the completion of the formal coursework on the degree plan (i.e., all coursework on the degree plan except 681, 684, 690, 691, 692, 693, 695, 697, 791, or other graduate courses specifically designated as S/U in the course catalog). The student should complete the Preliminary Examination no later than the end of the semester following the completion of the formal coursework on the degree plan.

The preliminary examination is required. The preliminary examination for a doctoral student shall be given no earlier than a date at which the student is within 6 credit hours of completion of the formal coursework on the degree plan (i.e., all coursework on the degree plan except 681, 684, 690, 691, 692, 693, 695, 697, 791, or other graduate courses specifically designated as S/U in the course catalog). The student should complete the Preliminary Examination no later than the end of the semester following the completion of the formal coursework on the degree plan.

Preliminary Examination Format

The objective of preliminary examination is to evaluate whether the student has demonstrated the following qualifications:

a. a mastery of the subject matter of all fields in the program;

b. an adequate knowledge of the literature in these fields and an ability to carry out bibliographical research;

c. an understanding of the research problem and the appropriate methodological approaches.

The format of the preliminary examination shall be determined by the student’s department (or interdisciplinary degree program, if applicable) and advisory committee, and communicated to the student in advance of the examination. The exam may consist of a written component, oral component, or combination of written and oral components.

Regardless of exam format, a student will receive an overall preliminary exam result of pass or fail. The department (or interdisciplinary degree
Preliminary Examination to the Graduate and Professional School via the Academic Requirements Completion System (ARCS) within 10 working days of completion of the preliminary examination.

If an approved examination committee member substitution (one only) has been made, their approval must be submitted to the Graduate and Professional School via ARCS. The approval of the designated department approver is also required on the request.

After passing the required preliminary oral and written examinations for a doctoral degree, the student must complete the final examination within four years of the semester in which the preliminary exam is taken. Exams taken in between terms will expire at the end of the term that ended prior to the exam. For example, a preliminary exam taken and passed during the Fall 2023 semester will expire at the end of the Fall 2027 semester. A preliminary exam taken in the time between the Summer and Fall 2023 semesters will expire at the end of the Summer 2027 semester.

Failure of the Preliminary Examination

First Failure

Upon approval of a student's examination committee (with no more than one member dissenting), and approval of the Department and Graduate and Professional School, a student who has failed a preliminary examination may be given one re-examination. In accordance with Student Rule 12.5, the student's department head or designee, intercollegiate faculty, or graduate advisory committee should make a recommendation to the student regarding their scholastic deficiency.

Second Failure

Upon failing the preliminary exam twice in a doctoral program, a student is no longer eligible to continue to pursue the PhD in that program/major. In accordance with Student Rule 12.5.3 and/or 12.5.4, the student will be notified of the action being taken by the department as a result of the second failure of the preliminary examination.

Retake of Failed Preliminary Examination

Adequate time must be given to permit a student to address inadequacies emerging from the first preliminary examination. The examination committee must agree upon and communicate to the student, in writing, an adequate time-frame from the first examination (normally six months) to retest, as well as a detailed explanation of the inadequacies emerging from the examination. The student and committee should jointly negotiate a mutually acceptable date for this retest. When providing feedback on inadequacies, the committee should clearly document expected improvements that the student must be able to exhibit in order to retake the exam. The examination committee will document and communicate the time-frame and feedback within 10 working days of the exam that was not passed.

Final Examination

Candidates for the doctoral degrees must pass a final examination by deadline dates announced in the Graduate and Professional School Calendar (https://grad.tamu.edu/knowledge-center/dates-and-deadlines/dates-and-deadlines/) each semester. A doctoral student is allowed only one opportunity to take the final examination.

No unsolved grades of D, F, or U for any course can be listed on the degree plan. The student must be registered for any remaining hours of 681, 684, 690, 691, 692, 693, 695, 697, 791, or other graduate courses specifically designated as S/U in the course catalog during the semester of the final exam. No student may be given a final examination until they have been admitted to candidacy and their current official cumulative and degree plan GPAs are 3.00 or better.
Refer to the Admission to Candidacy (https://catalog.tamu.edu/graduate/academic-expectations-general-degree-requirements/#degreerequirementstext) section of the graduate catalog for candidacy requirements.

A request to schedule the final examination must be submitted to the Graduate and Professional School via ARCS a minimum of 10 working days in advance of the scheduled date. Any changes to the degree plan must be approved by the Graduate and Professional School prior to the submission of the request for final examination.

The student’s advisory committee will conduct this examination. Only one committee member substitution is allowed with the approval of the Graduate and Professional School. If the substitution is for the sole external member of the advisory committee - with an appointment to a department other than the student’s major department - then the substitute must also be external to the student’s major department. In extenuating circumstances, with the approval of the Graduate and Professional School, an exception to this requirement may be granted.

The final examination is not to be administered until the dissertation or record of study is available in substantially final form to the student’s advisory committee, and all concerned have had adequate time to review the document. Whereas the final examination may cover the broad field of the candidate’s training, it is presumed that the major portion of the time will be devoted to the dissertation and closely allied topics. Persons other than members of the graduate faculty may, with mutual consent of the candidate and the chair of the advisory committee, be invited to attend a final examination for an advanced degree. A positive vote by all members of the graduate committee with at most one dissension is required to pass a student on their exam. A department can have a stricter requirement provided there is consistency within all degree programs within a department. Upon completion of the questioning of the candidate, all visitors must excuse themselves from the proceedings.

Final Examination Grading
The student’s department will promptly report the results of the Final Examination to the Graduate and Professional School via the Academic Requirements Completion System (ARCS) within 10 working days of completion of the final examination. The Graduate and Professional School will be automatically notified via ARCS of any cancellations.

A positive evaluation of the final exam by all members of a student’s advisory committee with at most one dissension is required to pass a student on their final exam. If an approved committee member substitution (1 only) has been made, their approval must be submitted to the Graduate and Professional School via ARCS.

Dissertation
The dissertation, which must be a candidate’s original work demonstrates the ability to perform independent research. Whereas acceptance of the dissertation is based primarily on its scholarly merit, it must also exhibit creditable literary workmanship. Dissertation formatting must be acceptable to the Graduate and Professional School as outlined in the Guidelines for Theses, Dissertations, and Records of Study.

After successful defense and approval by the student’s advisory committee and the head of the student’s major department (or chair of intercollegiate faculty, if applicable), a student must submit the dissertation in electronic format as a single PDF file to https://etd.tamu.edu/. Additionally, a dissertation approval form with original signatures must be received by the Graduate and Professional School through the Academic Requirements Completion System (ARCS). Both the PDF file and the completed ARCS approval form must be received by the deadline.

Deadline dates for submitting are announced each semester or summer term in the Graduate and Professional School Calendar (see Time Limit statement). These dates also can be accessed via the Graduate and Professional School website (https://grad.tamu.edu/).

Each student who submits a document for review is assessed a one-time thesis/dissertation processing fee through Student Business Services. This processing fee is for the thesis/dissertation services provided. After commencement, dissertations are digitally stored and made available through the Texas A&M Libraries.

A dissertation that is deemed unacceptable by the Graduate and Professional School because of excessive corrections will be returned to the student’s department head or chair of the intercollegiate faculty. The manuscript must be resubmitted as a new document, and the entire review process must begin anew. All original submittal deadlines must be met during the resubmittal process to graduate.

Additional Requirements

Residence
A student who enters the doctoral degree program with a baccalaureate degree must spend one academic year plus one semester in resident study at Texas A&M University. A student who holds master’s degree when they enter a doctoral degree program must spend one academic year in resident study. One academic year may include two adjacent regular semesters or one regular semester and one adjacent 10-week summer semester. The third semester is not required to be adjacent to the one year. Enrollment for each semester must be a minimum of 9 credit hours each to satisfy the residence requirement. A minimum of 1 credit hour must be in a non-distance education delivery mode. Semesters in which the student is enrolled in all distance education coursework will not count toward fulfillment of the residence requirement.

To satisfy the residence requirement, the student must complete a minimum of 9 credit hours per semester or 10-week summer semester in resident study at Texas A&M University for the required period. A student who enters a doctoral degree program with a baccalaureate degree may fulfill residence requirements in excess of one academic year (18 credit hours) by registration during summer sessions or by completion of a less-than-full course load (in this context a full course load is considered 9 credit hours per semester).

Students who are employed full-time while completing their degree may fulfill total residence requirements by completion of less-than-full time course loads each semester. In order to be considered for this, the student is required to submit a Petition for Waivers and Exceptions along with verification of employment to the Graduate and Professional School. An employee should submit verification of employment at the time they...
submit the degree plan. See Registration. (http://catalog.tamu.edu/graduate/academic-expectations-general-degree-requirements/#registrationandacademicstatustext)

See Residence Requirements (http://catalog.tamu.edu/graduate/academic-expectations-general-degree-requirements/#degreerequirementstext).

**Time Limit**
All requirements for doctoral degrees must be completed within a period of ten consecutive calendar years for the degree to be granted. A course will be considered valid until 10 years after the end of the semester in which it is taken. Graduate credit for coursework more than ten calendar years old at the time of the final oral examination may not be used to satisfy degree requirements.

After passing the required preliminary oral and written examinations for a doctoral degree, the student must complete the final examination within four years of the semester in which the preliminary exam is taken. Exams taken in between terms will expire at the end of the term that ended prior to the exam. For example, a preliminary exam taken and passed during the fall 2019 semester will expire at the end of the fall 2023 semester. A preliminary exam taken in the time between the summer and fall 2019 semesters will expire at the end of the summer 2023 semester.

A final corrected version of the dissertation or record of study in electronic format as a single PDF file must be cleared by the Graduate and Professional School within one year of the semester in which the final exam is taken. Exams taken in between terms will expire at the end of the term that ended prior to the exam. For example, a final exam taken and passed during the fall 2022 semester will expire at the end of the fall 2023 semester. A final exam taken in the time between the summer and fall 2022 semesters will expire at the end of the summer 2023 semester.

Failure to do so will result in the degree not being awarded.

**Continuous Registration**
A student in a program leading to a Doctor of Philosophy who has completed all coursework on their degree plan other than 691 (research) are required to be in continuous registration until all requirements for the degree have been completed. See Continuous Registration Requirements (http://catalog.tamu.edu/graduate/academic-expectations-general-degree-requirements/#registrationandacademicstatustext).

**Admission to Candidacy**
To be admitted to candidacy for a doctoral degree, a student must have:

1. completed all formal coursework on the degree plan with the exception of any remaining 681, 684, 690 and 691, or 791.
2. a 3.0 Graduate GPA and a Degree Plan GPA of at least 3.0 with no grade lower than C in any course on the degree plan,
3. passed the preliminary examination (written and oral portions),
4. submitted an approved dissertation proposal,
5. met the residence requirements. The final examination will not be authorized for any doctoral student who has not been admitted to candidacy.

**Languages**
A student is required to possess a competent command of English. For English language proficiency requirements, see the Admissions section of this catalog. The doctoral (PhD) foreign language requirement at Texas A&M University is a departmental option, to be administered and monitored by the individual departments of academic instruction.

**99-Hour Cap on Doctoral Degrees**
In Texas, public colleges and universities are funded by the state according to the number of students enrolled. In accordance with legislation passed by the Texas Legislature, the number of hours for which state universities may receive subvention funding at the doctoral rate for any individual is limited to 99 hours. Texas A&M and other universities will not receive subvention for hours in excess of the limit.

Institutions of higher education are allowed to charge the equivalent of non-resident tuition to a resident doctoral student who has enrolled in 100 or more semester credit hours of doctoral coursework.

Doctoral students at Texas A&M have seven years to complete their degree before being charged out-of-state tuition. A doctoral student who, after seven years of study, has accumulated 100 or more doctoral hours will be charged tuition at a rate equivalent to out-of-state tuition. Please note that the tuition increases will apply to Texas residents as well as students from other states and countries who are currently charged tuition at the resident rate. This includes those doctoral students who hold GAT, GANT, and GAR appointments or recipients of competitive fellowships who receive more than $1,000 per semester. Doctoral students who have not accumulated 100 hours after seven years of study are eligible to pay in-state tuition if otherwise eligible.

Doctoral students who exceed the credit limit will receive notification from the Graduate and Professional School during the semester in which they are enrolled and exceeding the limit in their current degree program. The notification will explain that the State of Texas does not provide funding for any additional hours in which a student is enrolled in excess of 99 hours. Texas A&M University will recover the lost funds by requiring students in excess of 99 hours to pay tuition at the non-funded, non-resident rate. This non-funded, non-resident tuition rate status will be updated for the following semester and in all subsequent semesters until receipt of a doctoral degree. Please see the Tuition Calculator (https://tuition.tamu.edu/) at the non-resident rate for an example of potential charges.

The following majors are exempt from the 99-Hour Cap on Doctoral Degrees and have a limit of 130 doctoral hours:

- Biochemistry and Molecular Biophysics
- Biomedical Sciences
- Clinical Psychology
- Counseling Psychology
- Genetics and Genomics
- Health Services Research
- Medical Sciences
- Microbiology
- Neurosciences (College of Medicine)
- Nutrition
- Oral and Craniofacial Biomedical Sciences
- Pharmaceutical Sciences
- Public Health Sciences
- School Psychology
- Toxicology
Application for Degree
For information on applying for your degree, please visit the Graduation (http://catalog.tamu.edu/graduate/academic-expectations-general-degree-requirements/#degreerequirements#text) section.