

# DOCTOR OF PHILOSOPHY IN APPLIED MATHEMATICS

The Doctor of Philosophy in Applied Mathematics program provides advanced education through advanced coursework, independent study, and original, creative research to make a significant contribution to the field of applied mathematics and to prepare students for careers in academia and industrial research.

## Admission Requirements

The program normally requires a bachelor’s degree in mathematics or applied mathematics. Candidates whose degree is in another field (for example, computer science, physics, or engineering) and whose background in mathematics is strong are also eligible for admission and are encouraged to apply. Applicants should have a bachelor’s degree from an accredited university. A cumulative GPA of 3.5/4.0 is usually required. The applicants must also have demonstrated the potential for conducting original research in applied mathematics. TOEFL scores (if required) should be a minimum of 80/550 (internet-based/paper-based test scores). A professional statement of goals/objectives (two pages) and a curriculum vitae must be submitted. Three letters of recommendation are required. Students must remove deficiencies in essential undergraduate courses that are prerequisites for the degree program, in addition to fulfilling all other degree requirements. GRE scores are optional, and typically, admitted students score at least 165 on the quantitative portion of the GRE; however, meeting the minimum or typical GPA and test score requirements does not guarantee admission.

The Director of Graduate Studies serves as temporary academic adviser for newly admitted graduate students in the master of science and the Ph.D. programs until an appropriate faculty member is selected as the research adviser. Students are responsible for following all departmental procedures, as well as the general requirements of the Graduate College.

## Curriculum

Code	Title	Credit Hours
<b>Core Courses</b>		<b>(15)</b>
A minimum GPA of 3.25 is required in the core courses.		
MATH 500	Applied Analysis I	3
MATH 577	Computational Mathematics I	3
Select a minimum of three courses from the following:		9
MATH 501	Applied Analysis II	3
MATH 540	Probability	3
MATH 553	Discrete Applied Mathematics I	3
MATH 563	Mathematical Statistics	3
MATH 578	Computational Mathematics II	3
<b>Concentration Outside of Math</b>		<b>(6-12)</b>
Select two to four classes		6-12
<b>General Electives</b>		<b>(9-27)</b>
Select 9-27 credit hours <sup>1</sup>		9-27
<b>Ph.D. Research</b>		<b>(24-36)</b>
MATH 691	Research and Thesis Ph.D.	24-36
<b>Math Seminar</b>		<b>(0)</b>
MATH 593	Seminar in Applied Mathematics <sup>2</sup>	0

**Minimum degree credits required: 72**

<sup>1</sup> The remaining courses in each student’s program are selected in consultation with, and approval of, the Director of Graduate Studies. The program may include at most three courses at the 400-level and at most two courses outside the department.

<sup>2</sup> Students must take the colloquium/seminar course MATH 593 at least six times with a satisfactory grade.

Students must pass three written qualifying exams at the Ph.D. level: MATH 500 Applied Analysis I, MATH 577 Computational Mathematics I, and one of the following: MATH 540 Probability, MATH 553 Discrete Applied Mathematics I, or MATH 563 Mathematical Statistics.

Students must pass one qualifying exam by the end of their third semester, and must pass all three by the end of their fifth semester. Students can attempt each exam twice, if needed. The exams will be offered twice every year, one in the fall and the other in spring. Students can take one, two, or three exams each semester.

Besides the courses in the core areas of study, the remaining courses in the program are selected in consultation with the student's academic adviser. The program may include at most three MATH courses at the 400-level. The program requires that the student takes the colloquium/seminar course MATH 593 at least six times with a satisfactory grade. The program must include at least two to four courses in an area of concentration outside of the department, as approved by the Director of Graduate Studies; these may include 400-level courses.

The comprehensive examination consists of an oral examination based on the student's research proposal. The exam aims to ensure that the student has the background to carry out successful research in their chosen area and the proposed research has sufficient scholarly merit.

The dissertation (thesis) is expected to contain a distinct and substantial, original, and publishable contribution to the field of study. The credit hours devoted to thesis research (MATH 691) must total between 24 and 36. An oral examination in defense of the thesis constitutes completion of the degree.

Exceptions to these general rules require approval by the departmental graduate studies committee.