MATHEMATICAL SCIENCES PH.D.

All students must meet the Requirements for the Doctor of Philosophy Degree

OVERVIEW

The Department of Mathematics and Statistics offers programs towards the Doctor of Philosophy in Mathematical Sciences (the Mathematical Sciences Ph.D. degree). There are two areas of concentration: core mathematics and applied mathematics. While concentrating in one of these areas, students are encouraged to take courses in both core mathematics and applied mathematics, so as to gain an appreciation of the methods of both, and the connections between theory and applications.

Opportunities for research arise from the research interests of the Department faculty, which include analysis, algebra, biomathematics, combinatorics, complex systems, differential equations, fluid mechanics, graph theory, mathematics education, modeling, and number theory.

SPECIFIC REQUIREMENTS

Requirements for Admission to Graduate Studies for the Degree of Doctor of Philosophy

Because of the breadth of pure and applied mathematics, it is recognized that applicants for admission will have diverse backgrounds. Admission requirements are therefore flexible. Applicants should have demonstrated strength in either core or applied mathematics, a bachelor’s degree with a major in mathematics or a closely related discipline, and satisfactory scores on both the general and subject (mathematics) sections of the Graduate Record Examination.

Minimum Degree Requirements for the Degree of Doctor of Philosophy

Each student must complete the comprehensive examination and an approved plan of study including at least seventy-five credits in course work or dissertation research. The student is required to write a doctoral dissertation and pass a final oral defense of that dissertation. The department requires two semesters of college-teaching experience. Students are expected to demonstrate appropriate proficiency in the use of technology. There is no formal language requirement.

Comprehensive Examination

The Examination consists of three parts, two written and one oral. Syllabi for these exams are available from the Director of Graduate Studies in Mathematics. They are taken at distinct times and all three must be satisfactorily completed in order to advance to candidacy. For students with a concentration in Core Mathematics, one three-hour written exam is in real and complex analysis, and the other three-hour written exam is in algebra. For students with a concentration in Applied Mathematics, one three-hour written exam is in numerical analysis and the other three-hour written exam is in differential equations.

The two-hour oral examination is conducted by the studies committee on a topic chosen by the student in consultation with the committee.

One written examination must be passed by the middle of the second year in the program. All three exams must be passed by the beginning of the third year.

Requirements for Advancement to Candidacy for the Degree of Doctor of Philosophy

Successful completion of the comprehensive examination.