Department of Mathematics

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Matthew Douglass, Chair

Graduate Faculty: Allaart, Allen, Anghel, Betelu, Brand, Brozovic, Cherry, Conley, Douglass, Gao, Iaia, Jackson, Kallman, Krueger, Kung, Liu, Mauldin, Monticino, Quintanilla, Richter, Sari, Shepler, Song, Urbanski.

Opportunities for supervised research are available in a variety of areas involving pure and applied mathematics, and statistics.

Students who graduate with degrees in mathematics are flexible and adaptable in the workplace and readily obtain jobs with high-technology companies and in business, industry, government and education. Salaries and working conditions are comparable with those of engineers and computer scientists.

Research

Faculty and students actively pursue both basic and applied research in mathematics from traditional areas of algebra, analysis, topology, statistics, probability and foundations to new and applied topics such as chaos theory, dynamical systems, image processing and stochastic differential equations.

Faculty research is supported by federal and private grants. Many of these grants provide research support for graduate students.

The library collection in the mathematical sciences is one of the nation's finest, with more than 18,000 volumes, and many are available electronically.

Scholarships and Financial Support

Graduate students usually support their study by working as teaching fellows for the department. Teaching fellows are paid competitive stipends.

Work also is available as a teaching assistant, math lab tutor or grader. The department has funds available for research assistants.

Contact the graduate advisor for complete details and for information about financial support.

Admission Requirements

Application for admission to the Toulouse School of Graduate Studies is made through the office of the dean of the School of Graduate Studies. The applicant should have the equivalent of an undergraduate major in mathematics at UNT. Deficiencies in this respect will be evaluated and must be remedied as a condition of final admission. A GRE or GMAT score is required. Contact the department or the Toulouse School of Graduate Studies concerning information about standardized admission test requirements.

Degree Programs

The Department of Mathematics offers graduate programs leading to the following degrees:

- Master of Science,
- Master of Arts, and
- Doctor of Philosophy, all with a major in mathematics.

All graduate students will consult with the graduate advisor regarding a program of study. Graduate students are evaluated annually regarding progress toward graduation. Those not making satisfactory progress will be dismissed from the mathematics program. Appeals for reinstatement may be made to the department's graduate affairs committee.

Master of Arts

The Master of Arts degree with a major in mathematics is designed primarily for those students who plan to pursue the PhD degree and who plan careers in college teaching, business or industry. The program consists of 24 hours of approved course work (numbered 5000 or above) and a thesis carrying 6 hours of credit. A student in this program normally will take five of these six courses: MATH 5310, MATH 5320, MATH 5520, MATH 5530, MATH 5610 and MATH 5620. A minor of 6 semester hours may be elected by the student with consent of the department. A final oral examination is scheduled after completion of the thesis.

Candidates for the MA degree must demonstrate proficiency in a foreign language (normally French, German, Spanish or Russian). See the Master's Degree Requirements section of this catalog for further details.

Master of Science

The Master of Science degree with a major in mathematics is designed for those students who wish to develop a high level of competence in mathematical theory and technique in order to apply this knowledge in fields outside mathematics. The program consists of 36 hours of approved course work, possibly including a minor of up to 9 hours in a field

outside mathematics. The student normally will take five of these six courses: MATH 5310, MATH 5320, MATH 5520, MATH 5530, MATH 5610 and MATH 5620.

Candidates must demonstrate a proficiency in computer programming equivalent to that acquired in a 6-hour introductory course. A final examination normally will be scheduled during the final term/semester of the student's course work. A thesis is optional.

Doctor of Philosophy

The Doctor of Philosophy degree is awarded for superior accomplishment, the attainment of a high level of scholarship and the demonstrated ability, through independent study and research, to carry out an original investigation and present the results of such investigation.

Course Requirements

Until the student has selected a major professor, the graduate advisor will assist in planning the doctoral program. The program will be designed to provide the student with competence in several major areas of mathematics and to provide for intensive study and research in the area of specialization. The student will be expected to complete approximately 90 hours of graduate work in mathematics beyond the bachelor's degree, of which about half should be in courses numbered above 6000. Included in this work, the student will be expected to take (or previously have taken the equivalent of) the following core sequences: MATH 5310-MATH 5320, MATH 5410-MATH 5420, MATH 5520-MATH 5530 and MATH 5610-MATH 5620. In addition, the student is required to take at least two 6000-level courses in each of the areas of algebra, analysis and topology.

Foreign Language Requirement

PhD candidates must demonstrate proficiency in a foreign language approved by the department (normally chosen from French, German, Spanish and Russian). See the Doctoral Degree Requirements section of this catalog for additional information.

Qualifying Examinations

Before enrolling in the dissertation seminar, the student must pass qualifying examinations over two areas chosen from algebra, topology, real analysis, complex analysis, probability and statistics, and applied mathematics. The doctoral advisory committee is appointed upon successful completion of the qualifying examinations.

Dissertation and Final Examination

The candidate must submit a dissertation exhibiting independent research on a topic approved by the doctoral committee. After the completion of the dissertation, a final comprehensive oral examination that will be primarily a defense of the dissertation will be given.

Courses of Instruction

All Courses of Instruction are located in one section at the back of this catalog.

Course and Subject Guide

The "Course and Subject Guide," found in the Courses of Instruction section of this book, serves as a table of contents and provides quick access to subject areas and prefixes.