

Master of Science in Mathematics

Overview

The Master of Science in Mathematics degree is a non-thesis program that includes thirty-two hours of coursework in theoretical and computational mathematics. The program is designed to enable a student to secure a position in government or industry, pursue a doctorate degree or further a teaching career. Students meeting admission requirements may enter the program at the beginning of any semester. All coursework is delivered online. Students are required to visit campus at the completion of the coursework for the purpose of exit exams, written and oral. In cases where the student is not able to travel to campus, on a case-by-case basis, exceptions can be made at the discretion of Dr. John Carter and Dr. Jerry Priddy.

Admission Requirements

Students are admitted to the Master of Mathematics degree program on the basis of academic preparation, aptitude for graduate study, and character based on the following documentation:

1. Completed admission application
2. Official transcripts verifying completion of BA or BS in Mathematics or Mathematics Education or similar degree with a cumulative GPA of 3.0 on 4.0 scale from baccalaureate program.
3. Three letters of recommendation from school administrators, professional colleagues, or college professors with knowledge of the applicant's academic program or professional performance.

Upon receipt and review of all information and supporting documents, applicants will be notified of their admission status. The University reserves the right to refuse admission to anyone who does not meet standards for admission.

Courses

MA503 History of Mathematics. 3 hours. Development of mathematics through calculus; solutions of problems with historical significance; problems that highlight significant mathematical characteristics. Prerequisite or Co-requisite: MA522 and MA535; or instructor's permission.

MA516 Mathematical Statistics. 4 hours. Topics in statistics, including combinatorial methods, probability, sampling distributions, and hypothesis testing are presented and proven with the detailed application of advanced calculus. Prerequisite or Co-requisite: MA522 and MA535.

MA517 Modern Algebra. 4 hours. Topics include number theory, groups, rings, integral domains and fields. Prerequisite or Co-requisite: MA522 and MA535; or instructor's permission.

MA518 Matrices and Linear Algebra. 3 hours. An introduction to matrix algebra and vector fields, with applications. Prerequisite or Co-requisite: MA522 and MA535.

MA521 Introduction to Real Analysis. 3 hours. Students will study the real number system, limits, sequences, series, and convergence; completeness; limits and continuity; and selected topics from differentiation and integration theory. Prerequisite or Co-requisite: MA522 and MA535; or equivalents.

MA522 Writing Mathematical Documents including LaTeX. 3 hours. This course concerns creating mathematical documents. Students will learn to read and write in the language of mathematics, including all the symbols and notations commonly found in the field of mathematics, by creating original documents and interpreting and replicating existing documents. Students will be introduced to the use of LaTeX. Prerequisite or Co-requisite: MA535; or equivalent; or instructor's permission.

MA523 Introduction to Complex Variables. 3 hours. An introduction to the study of functions of a complex variable including the algebra and geometry of complex numbers, derivatives, analytic functions, integral theorems, and applications. Prerequisite or Co-requisite: MA522 and MA535; or instructor's permission.

MA524 Topology. 3 hours. Including sets, relations, functions, metric spaces, compactness, completeness and connectedness. Prerequisite or Co-requisite: MA522 and MA535.

MA531 Numerical Analysis. 3 hours. The understanding and application of computer-based methods for solving equations and systems of equations; approximating functions, derivatives, and integrals; solving differential equations; and optimization. Computer programming is essential to the course, but no previous experience is assumed. Prerequisite or Co-requisite: MA522 and MA535; or instructor's permission.

MA535 Proof in Mathematics. 3 hours. A complete survey of mathematical proofs, covering all major techniques and styles. Introduction of entirely new areas of mathematics is limited as far as possible, in favor of a focus on the process of thinking about and composing proofs in more familiar contexts. Prerequisite or Co-requisite: MA522 and MA535; or instructor's permission.