

MASTER OF SCIENCE IN MATHEMATICS (APPLIED MATHEMATICS)

Web Site: <https://twu.edu/mathematics/graduate-programs/>

The Master of Science in Mathematics prepares the student to enter the workforce to teach at the community college level or to pursue doctoral degree programs in mathematics, statistics, applied mathematics, or related fields. The program of study also provides the student with an opportunity to include computer science and statistics in the degree plan.

An emphasis in applied mathematics is available for those desiring to pursue a career in a mathematics-related area in industry or government.

An emphasis in statistics is available for those interested in careers as applied statisticians or statistical programmers. Students can complete the program by taking evening or online courses in fall and spring. Variable-length courses are available in face-to-face or online format each summer.

Marketable Skills

Defined by the Texas Higher Education Coordinating Board's 60x30 Strategic Plan (<https://reportcenter.highered.texas.gov/agency-publication/miscellaneous/theeb-60x30-strategic-plan/>) as, "Those skills valued by employers that can be applied in a variety of work settings, including interpersonal, cognitive, and applied skills areas. These skills can be either primary or complementary to a major and are acquired by students through education, including curricular, co-curricular, and extracurricular activities."

- Apply mathematical theories and techniques to the solution of practical problems in business, engineering, the sciences, or other fields.
- Develop mathematical or statistical models of phenomena to be used for analysis and computational simulation.
- Determine appropriate methods for data analysis.
- Develop new principles and new relationships between existing mathematical principles to advance mathematical science.
- Disseminate research by writing reports, publishing papers, or presenting at professional conferences.
- Demonstrate personal accountability and work habits, integrity, and ethical behavior.
- Proficient in the software tools to achieve the skills listed, such as Matlab, R, SAS or SPSS, and LaTeX.

Admissions

All students must meet the University requirements as outlined in the Admission to the TWU Graduate School (<http://catalog.twu.edu/graduate/graduate-school/admission-graduate-school/>) section of the catalog.

This academic program may have additional admission criteria that must also be completed as outlined on the program's website.

Degree Requirements

Total Semester Credit Hours Required

This is a 30 semester credit hour (SCH) degree in which the student has the choice of three options below:

- Thesis Option: Take 24 SCH of coursework approved by a departmental advisor along with MATH 5983 and MATH 5993. An oral examination upon completion of the thesis is required.
- Professional Paper Option: Take 27 SCH of coursework approved by a departmental advisor along with MATH 5973. An oral examination upon completion of the professional paper is required.
- Coursework Option: Take 30 SCH of coursework approved by a departmental advisor. Three comprehensive exams will be required by the student.

Substitutions may be made with permission from a mathematics advisor.

Applied Mathematics Emphasis (30 SCH)

Code	Title	SCHs
Required Courses		
MATH 5033	Advanced Calculus	3
MATH 5513	Matrix Algebra	3
MATH 5523	Introduction to Number Theory	3
MATH 5593	Differential Equations	3
MATH 5833	Computer-Aided Mathematical Modeling	3
MATH 5873	Real Analysis and Topology	3
Electives		6
Six SCH selected from MATH and/or CSCI in consultation with and approved by advisor.		
Culmination		6
Thesis Option		
MATH 5983	Thesis	
MATH 5993	Thesis	
Professional Paper Option		
MATH 5973	Professional Paper	
An additional approved 3 SCH course		
Coursework Option		
An additional approved 6 SCH of coursework		
Comprehensive Exams		
Total SCHs		30

Thesis Option

24 semester credit hours of coursework and 6 semester credit hours for thesis.

Non-thesis Options

27 semester credit hours of coursework and 3 semester credit hours for professional paper.

30 semester credit hours of coursework and comprehensive exams.

Cooperative Education

In order for coursework in Cooperative Education to be counted as degree credit, department approval must be received during the semester in which the course is taken. This approval is in addition to approval to enroll in Cooperative Education coursework. Cooperative Education coursework, as with any coursework, must also be approved by the

student's advisory committee in order to be included in the degree plan. Only three semester credit hours of Cooperative Education may be counted toward the Master's degree.

Final Examination

A comprehensive written examination upon completion of the coursework or an oral examination upon completion of the thesis or professional paper are required for all degrees.