

Master of Natural Science (MNS)

The Department of Mathematics offers the Masters of Natural Science degree with an option in Mathematics. The program requires at least 32 credit hours of coursework in addition to the completion of a thesis or a comprehensive examination and graduate paper. In addition to coursework in mathematics, all students are required to take 6 credit hours in a complementary area outside of mathematics. Some options include education, business or cybersecurity.

We emphasize close interaction with faculty and small class sizes. The program is structured to provide students with breadth and depth to prepare them for industry, teaching or continuing graduate work. As a Masters of Natural Science student in Mathematics, you will learn from an active group of highly dedicated teachers and scholars with interests in pure and applied mathematics and mathematics education. Our faculty have specialties in actuarial science, algebra, algebraic geometry, combinatorics, complex analysis, cryptography, differential equations, geometry, graph theory, number theory, statistics and topology.

Many students also receive graduate assistantships which offer 9 credit hours of tuition during fall and spring semesters with 6 credit hours during the summer semester. Assistantships also carry a stipend for the academic year.

Mathematic students will...

- Gain depth in the core areas of algebra, analysis, and topology
- Have the opportunity to tailor coursework to individual goals and interests
- Have access to modern computer labs and the opportunity to use computers to produce mathematical results
- Have the opportunity to present mathematical results to mathematicians within the department and at conferences
- Produce an original thesis or graduate paper containing significant mathematical results

Internship and Employment Opportunities of Recent Graduates/ Graduate Schools and Programs of Recent Graduates

- High School Teachers
 - Marquette High School
 - Pattonville High School
- College Instructors
 - St. Charles Community College
 - Lindenwood University
 - Mineral Area College
 - John A. Logan College
- Ph.D. Candidates
 - North Texas
 - University of Illinois-Chicago
 - Southern Illinois University-Carbondale
 - University of Missouri-Columbia
- Account Administrator/Financial Analyst at Lockton Companies-St. Louis
- Senior Software Developer at Election Administrators-St. Louis

Admission Requirements

1. An undergraduate GPA of 2.5 on a 4 point scale
2. Minimum GPA of 2.75 on a 4 point scale for the last 30 semester hours of undergraduate science and math courses.
3. Two letters of recommendation addressing the applicant's potential for academic success.
4. Completion of a major in mathematics or completion of the following courses with a grade of 'C' or better in each course and a 3.0 GPA on a 4 point scale for these courses: Standard calculus sequence; Linear Algebra; Abstract Algebra; Nine additional hours of post-calculus courses. (An applicant who is no more than two courses short of meeting these requirements may be admitted on a provisional basis.)

Special Options with Mathematics Program:

- Available via ITV
- Select courses offered online during the summer

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This is a guide based on the 2019-2020 Graduate Bulletin and is subject to change. The time it takes to earn a degree will vary based on factors such as dual enrollment, remediation, and summer enrollment. Students meet with an academic advisor each semester and use Degree Works to monitor their progress.

CURRICULUM CHECKLIST**Required Courses – 32 hours****(Minimum of 16 hours must be at the 600 level)**

- MA 523 Probability and Statistics (3)
- MA 545 Linear Algebra and Matrices (3)
- MA 546 Advanced Calculus (3)
- MA 560 Research Methods (3)
- MA 642 Groups and Fields (3)
- MA 670 Computer Algebra System Seminar (1)

Computation Requirement

Students must take at least one course requiring significant use of computation from the list below

- MA 544 Numerical Analysis (3)
- MA 548 Enumerative Combinatorics (3)
- MA 550 Differential Equations II (3)
- MA 575 Time Series and Forecasting (3)
- MA 625 Applied Regression Analysis (3)
- MA 664 Computational Cryptography (3)
- MA 678 Mathematical Modeling (3)

Electives – Choose 3-6 hours, depending on Research Plan (below):

- MA 524 Probability & Statistics II (3)
- MA 544 Numerical Analysis (3)*
- MA 548 Enumerative Combinatorics (3)*
- MA 549 Graph Theory (3)
- MA 550 Differential Equations II (3)*
- MA 575 Time Series & Forecasting (3)*
- MA 585 Life Contingencies (3)
- MA 625 Applied Regression Analysis (3)*
- MA 633 Differential Geometry (3)
- MA 647 Complex Analysis (3)
- MA 664 Computational Cryptography (3)*
- MA 678 Mathematical Modeling (3)*

Complementary Area

6 Hours from any one department outside of Mathematics

*if not chosen as a required Computational Course

Research Plan – choose one:

Master's with Thesis:

- MA 694 Thesis (3) with oral defense

Master's without Thesis:

- Complete an approved project and written graduate paper.
- Pass comprehensive exams based on coursework.

NOTE: GR 603 Seminar in College Teaching is required of all students awarded a Graduate Assistantship.

Sample Two Year Schedule:

Fall

- MA 523 – Probability and Statistics I
- MA 560 – Research Methods
- MA 670 – CAS Seminar
- GR 603 – Seminar in College Teaching*

Spring

- MA 524 – Probability and Statistics II
- MA 642 – Groups and Fields
- MA 678 – Mathematical Modeling

Summer

- SE 617 – Foundations of Educational Technology
- MA 538 – History of Mathematics

Fall

- MA 546 – Advanced Calculus I
- MA 550 – Differential Equations II
- MA 625 – Applied Regression Analysis

Spring

- MA 545 – Linear Algebra and Matrices
- MA 575 – Time Series and Forecasting
- MA 694 – Thesis

Degree Requirements

Thesis Option - The student must write a thesis involving original mathematical research with an advisor and will enroll in MA 694 - Thesis. The student will give an oral defense of the thesis to a committee consisting of at least the thesis advisor, a second member of the Mathematics faculty and one faculty member from outside the department of Mathematics.

Non-Thesis Option - If the student does not write a thesis, the student must write a graduate paper on a topic chosen in consultation with an advisor and give a presentation on it to the department. In addition, the student will sit for a three-hour Comprehensive Examination covering topics from the student's course work.

Time Limit: The student must finish all degree requirements within 6 years of the start of the degree.