

**Master of Natural Science (MNS)**

At Southeast, you will not just learn mathematics, you will do mathematics! The Department of Mathematics offers the Masters of Natural Science degree with an option in Mathematics. The program requires 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.

**Mathematics 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
- Missouri State Government, Jefferson City, MO

**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 in the respective area of emphasis. Letters should be addressed to the Director of Admissions.
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 2017-2018 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 DegreeWorks to monitor their progress.

**CURRICULUM CHECKLIST****32 hours required**

(Minimum of 16 hours must be at the 600 level)

**Required Courses**

- MA 523 Probability and Statistics I (3)
- MA 545 Linear Algebra and Matrices (3)
- MA 546 Advanced Calculus I (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)

**Complementary Area**

6 Hours from any one department outside of Mathematics

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

- MA524 Probability & Statistics II (3)
- MA544 Numerical Analysis (3)\*
- MA548 Enumerative Combinatorics (3)\*
- MA549 Graph Theory (3)
- MA550 Differential Equations II (3)\*
- MA575 Time Series & Forecasting (3)\*
- MA585 Life Contingencies (3)
- MA625 Applied Regression Analysis (3)\*
- MA633 Differential Geometry (3)
- MA647 Complex Analysis (3)
- MA664 Computational Cryptography (3)\*
- MA678 Mathematical Modeling (3)\*

\*if not chosen as required Computational course

**Research Plan – choose one:**

Master's with Thesis:

- MA694 Thesis (3) with oral defense

**Master's without Thesis:**

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

NOTE: GR603 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 must pass 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.