

# MATHEMATICS

## MASTER OF SCIENCE (M.S.) • MASTER OF ARTS (M.A.)

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### PROGRAM DESCRIPTION:

Mathematics has been called the universal language. It's a language used in nearly every aspect of our lives, from balancing checkbooks to calculating the distance to the stars. Part logic, part problem solving, part philosophy and part exploration, mathematics opens the door to an amazing world of questions still to be asked and answered. Mathematicians are increasingly in demand as teachers, statisticians, modelers, actuaries, researchers - any position requiring an analytical and quantitative thinker.

Graduate students desiring to work toward a Master's degree in mathematics should have completed a departmental undergraduate major in mathematics equivalent to the one offered by USD. Students who do not have a sufficient background in mathematics may be required to complete course work that will not apply towards a Master's degree (e.g., linear algebra and differential equations).

The department offers non-thesis M.A. (Plan B) and thesis and non-thesis M.S. programs (Plan A and Plan B, respectively). The M.A. supports growth and professional development for high school teachers and exposure to additional math content for people who seek employment in other fields but do not have an interest in a terminal degree. The M.S. programs are intended for students who plan to pursue doctoral studies in mathematics and cover advanced topics that will prepare graduates to take qualifying exams in Math Ph.D. programs without the need for additional coursework. Additionally, students can prepare themselves for Ph.D. programs in related fields, such as Computational Science and Statistics.

### ADMISSION REQUIREMENTS:

Applicants must meet the admission requirements of the Graduate School and specific requirements of the mathematics program. Graduate School requirements can be accessed online at [www.usd.edu/grad](http://www.usd.edu/grad).

### ADDITIONAL REQUIREMENTS:

Completion of specific undergraduate coursework.  
International Students must provide satisfactory TOEFL scores

### APPLICATION DEADLINE:

Applications for the M.A. and M.S. programs are accepted throughout the year. Applicants who wish to be considered for a graduate assistantship, however, should submit applications by **March 15** for the proceeding academic year.

### GETTING STARTED:

Prospective graduate students may apply through the Graduate School at [www.usd.edu/grad/how-to-apply.cfm](http://www.usd.edu/grad/how-to-apply.cfm).

The Graduate School forwards completed applications to the appropriate academic department for review. The department will then recommend the admission status of the applicant to the Dean of the Graduate School, who will make the final decision on admission.

### NON-DEGREE PURSUANT STATUS:

To experience the University of South Dakota as a non-degree pursuant student, the University offers graduate students the option of learning under a non-degree pursuant classification. Up to nine credit hours earned as a non-degree pursuant student may be applied to a graduate degree from USD at the discretion of the academic department.

**Please note:** Enrollment in a course does not guarantee acceptance into the program.

Enrolling as a non-degree pursuant student is easy. Simply complete the online registration form at <https://www.usd.edu/cde/registration> during the registration session open to the public.

### FOR MORE INFORMATION:

For more information, please visit [www.usd.edu/grad](http://www.usd.edu/grad) or contact:

**University of South Dakota**  
Math Department  
Phone: 605-677-5262  
Fax: 605-677-5263  
E-Mail: [math@usd.edu](mailto:math@usd.edu)  
[www.usd.edu/math](http://www.usd.edu/math)

**University of South Dakota**  
Graduate School  
Phone: 605-677-6240  
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UNIVERSITY OF  
SOUTH DAKOTA

## PROGRAM REQUIREMENTS

### Master of Arts (M.A.) in Mathematics (Non-Thesis) Required Courses

COURSE	COURSE TITLE	CREDIT HOURS
MATH 513	Introduction to Abstract Algebra I	3
MATH 523	Advanced Calculus I	3
MATH 514	Introduction to Abstract Algebra II	3
OR		OR
MATH 524	Advanced Calculus II	3

**Total Credit Hours: 9**

### Master of Arts (M.A.) in Mathematics (Non-Thesis) Elective Courses

COURSE	COURSE TITLE	CREDIT HOURS
MATH 511	Theory of Numbers	3
MATH 514	Introduction to Abstract Algebra II	3
MATH 516	Combinatorics	3
MATH 517	Matrix Theory	3
MATH 524	Advanced Calculus II	3
MATH 550	History of Mathematics	3
MATH 571	Numerical Analysis I	3
MATH 572	Numerical Analysis II	3
MATH 575	Operations Research	3
MATH 577	Advanced Operations Research	3
MATH 581	Probability and Statistics	3
MATH 585	Theory of Statistics	3
MATH 592	Topics in Mathematics	3
MATH 713	Advanced Algebra I	3
MATH 714	Advanced Algebra II	3
MATH 721	Complex Variables	3
MATH 723	Real Variables	3
MATH 724	Real Variables II	3
MATH 731	Partial Differential Equations	3
MATH 735	Mathematical Modeling	3
MATH 761	Introduction to Topology	3
MATH 790	Seminar in Mathematics	3
MATH 791	Independent Study in Mathematics	3
MATH 792	Topics in Mathematics	3
<b>Non-Dept</b>	<b>Required Electives</b>	<b>8</b>

**Elective Courses Total Credit Hours: 23**

**Master of Arts in Mathematics Program Total:  
32 Credit Hours**

Also, (a) all students in the M.A. or M.S. program are required to complete a final written exam as part of the Master degree requirements and (b) students pursuing the M.A. or the M.S. non-thesis option will be required to complete a final oral exam. Students pursuing the M.S. thesis option will defend their thesis as their oral exam.

### Master of Science (M.S.) in Mathematics Required Courses

COURSE	COURSE TITLE	CREDIT HOURS
MATH 713	Advanced Algebra I	3
MATH 723	Real Variables I	3
MATH 798	Thesis	6
MATH 714	Advanced Algebra II	3
OR		OR
MATH 724	Real Variables II	3

**Total Credit Hours: 15/9 (Thesis/Non-Thesis)**

### Master of Science (M.S.) in Mathematics (Thesis, Non-Thesis) Elective Courses

COURSE	COURSE TITLE	CREDIT HOURS
MATH 511	Theory of Numbers	3
MATH 513	Introduction to Abstract Algebra I	3
MATH 514	Introduction to Abstract Algebra II	3
MATH 516	Combinatorics	3
MATH 517	Matrix Theory	3
MATH 523	Advanced Calculus I	3
MATH 524	Advanced Calculus II	3
MATH 571	Numerical Analysis I	3
MATH 572	Numerical Analysis II	3
MATH 575	Operations Research	3
MATH 577	Advanced Operations Research	3
MATH 581	Probability and Statistics	3
MATH 585	Theory of Statistics	3
MATH 592	Topics in Mathematics	3
MATH 714	Advanced Algebra II	3
MATH 721	Complex Variables	3
MATH 724	Real Variables II	3
MATH 731	Partial Differential Equations	3
MATH 735	Mathematics Modeling	3
MATH 761	Introduction to Topology	3
MATH 790	Seminar in Mathematics	3
MATH 791	Indep. Study in Mathematics	3
MATH 792	Topics in Mathematics	3
<b>Non-Dept</b>	<b>Electives</b>	<b>0-6</b>

**Masters Thesis: Total Credit Hours: 6**

**Elective Courses Total Credit Hours:  
12-18/18-24 (Thesis/Non-Thesis)**

**M.S. in Mathematics (Thesis) Program Total: 33**

**M.S. in Mathematics (Non-Thesis) Program Total: 33**