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# MASTER OF SCIENCE IN MATHEMATICS

The School of Mathematics provides opportunities for study in a wide range of mathematical disciplines. First-year graduate sequences include algebra, analysis, differential equations, geometry, numerical analysis, probability, quantitative finance, statistics, and topology in addition to courses in methods of applied mathematics.

### **MS Mathematics Information**

A program of study leading to a master's degree in mathematics consists of 30 credit hours and must include at least twelve credit hours at the 6000 level or above in mathematics, with courses in at least three different fields of Mathematics, as follows.

Students must maintain an overall grade-point average of at least 2.7 and receive a grade of **C** or better in each mathematics course in the program of study.

## **Non-thesis Option**

Classes at 3000-level or below, MATH 6701, and MATH 6702 cannot be used to fulfill the degree requirements.

Code Title		Credit Hours
Analysis Concentrati	on	
Select at least two of the following: <sup>1,2</sup>		6
MATH 6321 Funct	ions of a Complex Variable I	
MATH 6337Real A	nalysis I	
MATH 6338Real A	nalysis II	
MATH 6580Introd	uction to Hilbert Spaces	
MATH 7334Opera	tor Theory	
MATH 7337 Harmo	onic Analysis	
MATH 7338Funct	ional Analysis	
Areas		
Select at least one cl	ass in two areas. <sup>2</sup>	6
Non-Thesis Option		
MATH 6000-level or h	nigher <sup>2</sup>	6
Free Electives <sup>3</sup>		12
Total Credit Hours		30

<sup>1</sup> One of these two classes must be MATH 6337 or MATH 6338

<sup>2</sup> Minimum grade of **B** or better required.

<sup>3</sup> 9 credits of free electives at 4000-level or above, and additional 3 credits of 6000-level coursework

## **Thesis Option**

Classes at 3000-level or below, MATH 6701, and MATH 6702 cannot be used to fulfill the degree requirements.

Code	Title	Credit Hours
Analysis	Concentration	
Select at	least two of the following: <sup>1,2</sup>	6
MATH	1 6321 Functions of a Complex Variable	1

Total Credit Hours		30
Additional 4000-level or highe	r Coursework	9
MATH 9000 Doctoral Thesis	S	9
Thesis		
Select at least one class in tw	o areas. <sup>2</sup>	6
Areas		
MATH 7338Functional Ana	Ilysis	
MATH 7337 Harmonic Anal	ysis	
MATH 7334Operator Theor	ŷ	
MATH 6580Introduction to	Hilbert Spaces	
MATH 6338Real Analysis I	I	
MATH 6337 Real Analysis I		

One of these two classes must be MATH 6337 or MATH 6338 Minimum grade of **B** or better required.

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## **Discrete Mathematics and Algebra**

Code	Title	Hours
MATH 6014	Graph Theory and Combinatorial Structures	3
MATH 6121	Modern Abstract Algebra I	3
MATH 6122	Modern Abstract Algebra II	3
MATH 7016	Combinatorics	3
MATH 7018	Probabilistic Methods in Combinatorics	3

### Geometry and Topology

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Code	Title	Credit Hours
MATH 6441	Algebraic Topology I	3
MATH 6442	Algebraic Topology II	3
MATH 6455	Differential Geometry I	3
MATH 6456	Differential Geometry II	3
MATH 6457	Geometry and Topology I	3
MATH 6458	Introduction to Geometry and Topology II	3

## **Differential Equations**

Code	Title	Credit Hours
MATH 6307	Ordinary Differential Equations I	3
MATH 6308	Ordinary Differential Equations II	3
MATH 6341	Partial Differential Equations I	3
MATH 6342	Partial Differential Equations II	3

## **Probability and Mathematical Statistics**

Code	Title	Credit Hours
MATH 6241	Probability I	3
MATH 6242	Probability II	3
MATH 7244	Stochastic Processes and Stochastic Calculus I	3
MATH 7245	Stochastic Processes and Stochastic Calculus II	3
MATH 6262	Advanced Statistical Inference I	3
MATH 6263	Testing Statistical Hypotheses	3

MATH 6266	Linear Statistical Models	3
MATH 6267	Multivariate Statistical Analysis	3

### **Numerical Analysis**

Code	Title	Credit Hours
MATH 6640	Introduction to Numerical Methods for Partial Differential Equations	3
MATH 6643	Numerical Linear Algebra	3
MATH 6644	Iterative Methods for Systems of Equations	3
MATH 6645	Numerical Approximation Theory	3
MATH 6646	Numerical Methods for Ordinary Differential Equations	3

## College of Sciences B.S. in Mathematics + M.S. Degree Program in Mathematics

The Georgia Tech College of Sciences BS/MS degree program enables highly motivated students with strong academic credentials to earn a Bachelor of Science in Mathematics and a Master of Science in Mathematics. The BS/MS program prepares students for competitive career placements with higher earning potentials as well as competitive admission to Ph.D. and professional programs (including medical/law/ pharmacy/dental/pharmacy schools). Thesis and non-thesis options are offered for the BS/MS program. Undergraduates with a significant amount of AP/IB/dual enrollment credits are highly encouraged to apply to the BS/MS program.

### Admission and Program Requirements:

1. To apply to the program, students must have at least 30 credit hours earned at Georgia Tech with an undergraduate GPA of 3.3 or higher, and fewer than 90 credit hours overall (including transfer credit).

2. If admitted to the B.S./M.S. program, students must complete six credit hours of MATH coursework, with grades of B or higher, that can be used to fulfil the BS and MS requirements, except seminar, reading or research coursework. This coursework must be completed prior to earning the B.S. degree and proceeding to the M.S. program. These credits will be counted towards both the BS degree and MS degree. Due to the flexibility in selection of courses that may count for the BS and MS degree, MATH academic advisors will communicate with the Degree Certification Team in the Registrar's Office regarding which specific courses (i.e. six credits) are double counted for the BS and MS. This step will assure that degree audits are completed correctly

3. Students considering the M.S. Thesis Option are strongly encouraged to begin undergraduate research early in their B.S. program of study. The student must identify the M.S. thesis advisor prior to completion of the B,S, degree and proceeding to the M.S. program. Research described in an undergraduate thesis submitted as a part of the B.S. Research Option cannot be used in the M.S. thesis.

4. The minimum GPA for graduation with a B.S. in Mathematics to continue to the M.S. program is 3.00. The minimum GPA for graduation with the M.S. is 2.70.

#### 5. The requirements for the BS can be found in https://

catalog.gatech.edu/programs/mathematics-bs/ The requirements for the MS can be found in https://catalog.gatech.edu/programs/mathematics-ms/#requirementstext Both requirements are to be fulfilled by the end of the studies to be awarded the BS and MS.

### Summary:

Students pursuing the BS/MS Option in Mathematics must complete all requirements for the Bachelor of Science in Mathematics program and the Master of Science in Mathematics program. Students may use a maximum of 6 credit hours of approved coursework (4000-level or higher; not seminar or research credit, MATH 6701 or MATH 6702) in Mathematics with grades of B or higher from the Bachelor of Science program of study.