Mathematics MS

COLLEGE OF SCIENCE AND TECHNOLOGY

Learn more about the Master of Science in Mathematics.

About the Program

The Department of Mathematics offers graduate work leading to the Master of Science degree. The aim of the MS program is to provide students with a foundation sufficient to pursue careers in mathematics in industry, government or education. The program offers opportunities to conduct original research under the supervision of a faculty member.

Time Limit for Degree Completion: 3 years

Campus Location: Main

Full-Time/Part-Time Status: Students complete the degree program through classes offered before 4:30 p.m. The degree program can be completed on a full- or part-time basis.

Interdisciplinary Study: The program encourages interdisciplinary coursework, research and interactions among faculty and students with interest in computer and information sciences, physical and life sciences, statistics and engineering.

Affiliation(s): The Mathematics program at Temple University is affiliated with the American Mathematical Society and the Mathematical Association of America.

Study Abroad: Department faculty are active internationally and sometimes travel overseas for conferences and extended research visits. In some cases, students may participate in these activities.

Accreditation: This program adheres to accepted professional standards of mathematics education and research.

Areas of Specialization: The department has approximately 25 faculty members actively involved in research and graduate education. With a graduate student body of less than 40, we are a program of moderate size with a high faculty/student ratio. Thus, we provide students with unique opportunities for flexible program design and ample interaction with faculty. Classes are small and are held in an informal atmosphere enabling students and faculty to work closely together.

The department offers a great variety of choices for areas of specialization. A strong research presence exists in the following areas: algebra, computational mathematics, differential geometry and topology, geometric group theory, global geometry, harmonic analysis, invariant theory, mathematical biology, mathematical physics, mathematics of materials, numerical analysis, partial differential equations, probability, representation theory and several complex variables. Both prospective and matriculated students are encouraged to browse faculty webpages and contact faculty directly for more detailed information regarding areas of specialization and opportunities for further research.

Job Prospects: Graduates either continue advanced educational programs or pursue employment in industry, education, or government laboratories and agencies.

Non-Matriculated Student Policy: Non-matriculated students must coordinate coursework with the Graduate Chair.

Financing Opportunities: Teaching Assistants teach basic undergraduate mathematics courses, ranging from remedial courses through calculus. The standard teaching load is 20 hours per term. In determining the load, credit is given for more difficult and challenging teaching assignments. Research Assistantships are sometimes available, typically through special projects and grants. Support generally includes a stipend and tuition of up to 9 credits per term.

Admission Requirements and Deadlines

Application Deadline:

Fall Priority Deadline: March 1

Applications submitted after the priority deadline will be considered for admission on a rolling basis.

APPLY ONLINE to this graduate program.

Letters of Reference:
Number Required: 3

From Whom: Letters of recommendation should be obtained from individuals who are well acquainted with the applicant's abilities and achievements in mathematics and related areas, particularly former instructors of mathematics courses and projects. Letters from instructors in related areas such

as computation or the physical and life sciences are also appropriate. In certain cases, letters from employment supervisors or project leaders may be appropriate as well.

Coursework Required for Admission Consideration: Applicants must have completed fundamental undergraduate mathematics courses.

Bachelor's Degree in Discipline/Related Discipline: All applicants must hold a baccalaureate degree from an accredited college or university.

Statement of Goals: In 500 to 1,000 words, please describe your academic journey and your educational goals at Temple University. In prior years, successful applications have included discussion of the following topics:

- Motivation for pursuing graduate work in mathematics;
- Prior experience in research and/or rigorous self-study;
- Career goals; and
- How one sees themself fitting into the research profile of the department.

Feel free to add any additional information that might not be fully explained in other parts of your application.

Standardized Test Scores:
GRE General Test or GRE Subject Test in Mathematics: The GRE General Test is not required and will not be considered. The GRE Subject Test in Mathematics is optional.

Applicants who earned their baccalaureate degree from an institution where the language of instruction was other than English, with the exception of those who subsequently earned a master's degree at a U.S. institution, must report scores for a standardized test of English that meet these minimums:

- TOEFL iBT: 79
- IELTS Academic: 6.5
- PTE Academic: 53
- Duolingo: 110

Test Waivers: An applicant who wants to have certain admission requirements waived must contact the department directly. Requests are considered by the department on a case-by-case basis. In some cases, an additional appeal to the Graduate School may be required. In such a case, the department makes a preliminary determination for the applicant and, if positive, issues a supporting letter to the Graduate School on the applicant's behalf.

Resume: Current resume required.

Transfer Credit: Students who have taken graduate courses at other institutions or at Temple University prior to matriculation may apply for transfer credit. All applications for transfer credit are reviewed by the Graduate Committee, which has the option to deny credit if the courses involved are deemed substantially inferior to similar courses offered by the Department of Mathematics. The credits must be equivalent to coursework offered at Temple, with a grade of "B" or better having been earned in the course(s). No course completed more than five years before the date of application will be awarded credit, nor will courses substantially similar to courses taken since matriculation earn transfer credit. Transfer credit is only available for graduate-level courses in mathematics or those in related fields that have a substantial mathematical content. Applications for transfer credit are not considered until the student has completed at least three graduate courses totaling at least 9 credits. The maximum number of transfer credits awarded is 6.

Program Requirements

General Program Requirements:
Number of Credits Required Beyond the Baccalaureate: 30

Required Courses:
The Master of Science degree requires 10 graduate courses at the 5000 level or higher. The program of study must be designed in coordination with a Mathematics faculty advisor and approved by the departmental Graduate Committee. With the approval of the faculty advisor and Graduate Committee, relevant courses from departments other than Mathematics may be included.

The MS degree is offered with an optional concentration in Applied and Computational Mathematics. The concentration is designed for students interested in incorporating advanced study in mathematical and computational methods into the Master of Science program. Students pursuing this concentration complete at least 15 credits of coursework in applied and computational mathematics within their 30-credit degree program.

Culminating Events:
After satisfying the 30-credit course requirement, students may choose between the following three options as the culminating event for the MS degree:

- Master's Thesis
- Master's Comprehensive Examination
- Master's Pass on the PhD Comprehensive Examination

Master's Thesis:
Students who choose to submit a master's thesis must select a faculty advisor and a thesis advisory committee. These arrangements are subject to the approval of the Mathematics Graduate Committee. The date, time and location of a thesis defense are set by the Graduate Chair in consultation with the student's advisory committee.

Master's Comprehensive Examination:
For students selecting this option, a written Master's Comprehensive Examination is composed by at least two departmental Graduate Faculty. The topics covered should correspond to the student's program of study as approved by the Graduate Committee. The exam is graded by at least two Mathematics faculty members, with grades of either Pass or Fail. Students interested in taking the Master's Comprehensive Examination are required to make a written request to the Graduate Chair at least four weeks in advance. If the examination is failed, it may be taken again once, or the student may attempt a master's pass on the PhD Comprehensive Examination.

Master's Pass on the PhD Comprehensive Examination:
Students choosing this option must take three of the separate 25-point sections of the written PhD Comprehensive Examination. A student who achieves a total score of at least 40 on the three sections of the examination, with no individual section score below 8, obtains a master's pass on the exam and has fulfilled the examination requirement for the MS degree. If one of the individual exam scores falls below 8 points, that exam may be repeated once, or the exam in a different topic may be attempted once, or the student may take the Master's Comprehensive Examination described above. Such arrangements are subject to approval by the Graduate Committee. The case of a student failing the comprehensive exam by a small margin is discussed by the department's Graduate Committee, which takes the student's whole academic record into account in its decision.

Accelerated Programs

Undergraduate students may opt to pursue an accelerated +1 program, enabling them to complete both a bachelor's degree and master's degree in less time than the traditional route.

The accelerated pathway for the Mathematics MS is open to students pursuing the Mathematics BS.

Cohort Code: XMSMATH

Minimum Cumulative GPA: 3.25

Graduate Courses Approved to Count for Both Undergraduate and Graduate Degrees

Code	Title	Credit Hours
Select 2-4 courses from the following: [1]		6-12
MATH 5000	Special Topics in Math	
MATH 5032	Stochastic Calculus	
MATH 5033	Introduction to Stochastic Processes	
MATH 5045	Ordinary Differential Equations	
MATH 5065	Topology	
Select up to one year-long sequence from the following:		6-0
MATH 5043 & MATH 5044	Numerical Analysis and Numerical Methods for Ordinary Differential Equations	
MATH 5057 & MATH 5058	Applied Partial Differential Equations and Optimization and Fundamentals of Mathematical Modeling	
MATH 8011 & MATH 8012	Abstract Algebra I and Abstract Algebra II	
MATH 8031 & MATH 8032	Probability Theory and Stochastic Processes	
MATH 8041 & MATH 8042	Real Analysis I and Real Analysis II	
MATH 8051 & MATH 8052	Functions of a Complex Variable I and Functions of a Complex Variable II	

MATH 8061 & MATH 8062	Differential Geometry and Topology I and Differential Geometry and Topology II
Total Credit Hours	**12**

[1] Selecting only two courses from this list will allow room for a year-long course sequence in Year 4.

Suggested Academic Plan for Junior Year Spring Start

Course	Title	Credit Hours
Year 3		
Spring		
Select one of the following:		3
MATH 5000	Special Topics in Math	
MATH 5032	Stochastic Calculus	
MATH 5033	Introduction to Stochastic Processes	
MATH 5045	Ordinary Differential Equations	
MATH 5065	Topology	
	Credit Hours	**3**
Year 4		
Fall		
Select one or two of the following: [1]		3-6
MATH 5000	Special Topics in Math	
MATH 5032	Stochastic Calculus	
MATH 5033	Introduction to Stochastic Processes	
MATH 5045	Ordinary Differential Equations	
MATH 5065	Topology	
Select up to one of the following (first course in a year-long sequence): [2]		3-0
MATH 5043	Numerical Analysis	
MATH 5057	Applied Partial Differential Equations and Optimization	
MATH 8011	Abstract Algebra I	
MATH 8031	Probability Theory	
MATH 8041	Real Analysis I	
MATH 8051	Functions of a Complex Variable I	
MATH 8061	Differential Geometry and Topology I	
	Credit Hours	**6**
Spring		
Select up to one of the following:		0-3
MATH 5000	Special Topics in Math	
MATH 5032	Stochastic Calculus	
MATH 5033	Introduction to Stochastic Processes	
MATH 5045	Ordinary Differential Equations	
MATH 5065	Topology	
Select up to one of the following (second course in a year-long sequence): [3]		3-0
MATH 5044	Numerical Methods for Ordinary Differential Equations	
MATH 5058	Fundamentals of Mathematical Modeling	
MATH 8012	Abstract Algebra II	
MATH 8032	Stochastic Processes	
MATH 8042	Real Analysis II	
MATH 8052	Functions of a Complex Variable II	
MATH 8062	Differential Geometry and Topology II	
	Credit Hours	**3**
	Total Credit Hours	**12**

[1] Selecting only one course from this list will allow room for a year-long course sequence in Year 4.
[2] Students may select from this list only if one course was selected from the list above.
[3] Students may select from this list only if they have selected the first course in the year-long sequence in Year 4 Fall.

Admissions Criteria

Candidates for the +1 program must:

- apply during the fall of their junior year (to start in the spring) or in the spring before their senior year (to start a 9-credit option as seniors).
- have a 3.25 undergraduate GPA before approval.
- have two faculty members submit a letter of recommendation to cst.gi@temple.edu.
- complete the remaining credits for the master's in the year following undergraduate graduation.

Application: https://cst.temple.edu/admissions/graduate-admissions

Contact Information

David Futer, PhD
dfuter@temple.edu

Boris Datskovsky, PhD
boris.datskovsky@temple.edu

Learn more about the accelerated program in Mathematics and other College of Science and Technology +1 programs.

Contacts

Program Web Address:

https://www.temple.edu/academics/degree-programs/mathematics-ms-st-math-ms

Department Information:

Dept. of Mathematics
638 Wachman Hall
1805 N. Broad Street
Philadelphia, PA 19122-6094
grad.math@temple.edu
215-204-7842

Submission Address for Application Materials:

https://cst.temple.edu/academics/graduate-programs/apply-now

Department Contacts:

Graduate Chairperson:
David Futer, PhD
dfuter@temple.edu
215-204-7854

Department Chairperson:
Brian Rider, PhD
brian.rider@temple.edu
215-204-7589