

# MATHEMATICS: FOUNDATIONS OF ADVANCED STUDIES, MA

This is a named option within the Mathematics MA. It is designed to strengthen the student's mathematics background and enhance the opportunities for applications to PhD programs and for employment as a mathematician in nonacademic environments.

## ADMISSIONS

### ADMISSIONS

Please consult the table below for key information about this degree program's admissions requirements. The program may have more detailed admissions requirements, which can be found below the table or on the program's website.

Graduate admissions is a two-step process between academic programs and the Graduate School. **Applicants must meet the minimum requirements (<https://grad.wisc.edu/apply/requirements/>) of the Graduate School as well as the program(s).** Once you have researched the graduate program(s) you are interested in, apply online (<https://grad.wisc.edu/apply/>).

Requirements	Detail
Fall Deadline	March 15
Spring Deadline	November 1
Summer Deadline	The program does not admit in the summer.
GRE (Graduate Record Examinations)	Not required but may be considered if available.
English Proficiency Test	Every applicant whose native language is not English, or whose undergraduate instruction was not exclusively in English, must provide an English proficiency test score earned within two years of the anticipated term of enrollment. Refer to the Graduate School: Minimum Requirements for Admission policy: <a href="https://policy.wisc.edu/library/UW-1241">https://policy.wisc.edu/library/UW-1241</a> ( <a href="https://policy.wisc.edu/library/UW-1241/">https://policy.wisc.edu/library/UW-1241/</a> ).
Other Test(s) (e.g., GMAT, MCAT)	The GRE subject test in Mathematics is not required but may be considered if available.
Letters of Recommendation Required	3

Admission is competitive. For more information about application to the MA program, see the department's admission website (<https://math.wisc.edu/graduate/master-of-arts-foundation-of-studies/applying-for-ma-fas/>).

## FUNDING

### FUNDING

#### GRADUATE SCHOOL RESOURCES

Resources to help you afford graduate study might include assistantships, fellowships, traineeships, and financial aid. Further funding information (<https://grad.wisc.edu/funding/>) is available from the Graduate School. Be sure to check with your program for individual policies and restrictions related to funding.

#### PROGRAM RESOURCES

The Department of Mathematics cannot provide financial support for the Master's–Foundations of Advanced Studies Degree program.

Students enrolled in this program are not eligible to receive tuition remission from graduate assistantship appointments at this institution.

## REQUIREMENTS

### MINIMUM GRADUATE SCHOOL REQUIREMENTS

Review the Graduate School minimum academic progress and degree requirements (<http://guide.wisc.edu/graduate/#policiesandrequirements>), in addition to the program requirements listed below.

### NAMED OPTION REQUIREMENTS MODE OF INSTRUCTION

Face to Face	Evening/ Weekend	Online	Hybrid	Accelerated
Yes	No	No	No	Yes

#### Mode of Instruction Definitions

**Accelerated:** Accelerated programs are offered at a fast pace that condenses the time to completion. Students typically take enough credits aimed at completing the program in a year or two.

**Evening/Weekend:** Courses meet on the UW–Madison campus only in evenings and/or on weekends to accommodate typical business schedules. Students have the advantages of face-to-face courses with the flexibility to keep work and other life commitments.

**Face-to-Face:** Courses typically meet during weekdays on the UW–Madison Campus.

**Hybrid:** These programs combine face-to-face and online learning formats. Contact the program for more specific information.

**Online:** These programs are offered 100% online. Some programs may require an on-campus orientation or residency experience, but the courses will be facilitated in an online format.

### CURRICULAR REQUIREMENTS

#### Requirement Detail

Minimum	30 credits
Credit Requirement	

Minimum Residence Credit Requirement	16 credits
Minimum Graduate Coursework Requirement	30 credits must be graduate-level coursework. Refer to the Graduate School: Minimum Graduate Coursework (50%) Requirement policy: <a href="https://policy.wisc.edu/library/UW-1244">https://policy.wisc.edu/library/UW-1244</a> ( <a href="https://policy.wisc.edu/library/UW-1244/">https://policy.wisc.edu/library/UW-1244/</a> ).
Overall Graduate GPA Requirement	3.00 GPA required. Refer to the Graduate School: Grade Point Average (GPA) Requirement policy: <a href="https://policy.wisc.edu/library/UW-1203">https://policy.wisc.edu/library/UW-1203</a> ( <a href="https://policy.wisc.edu/library/UW-1203/">https://policy.wisc.edu/library/UW-1203/</a> ).
Other Grade Requirements	None.
Assessments and Examinations	None.
Language Requirements	No language requirements.

## REQUIRED COURSES

Code	Title	Credits
<b>Core</b>		
These courses must be taken by all students, except when it is determined by the director of the program that equivalent courses were taken prior to entering the program.		
MATH 522	Analysis II	3
MATH 542	Modern Algebra	3
<b>Basic Electives:</b>		
FOUR courses numbered 500 or above in Mathematics may be taken as basic elective courses, including up to three credits of MATH 698 or MATH 790. Excludes courses counted toward another requirement. Excludes MATH 521, 522, 541, 542, 607, 681, 682, 691, 692, 790.		12
MATH/COMP SCI 513	Numerical Linear Algebra	
MATH/COMP SCI 514	Numerical Analysis	
MATH 519	Ordinary Differential Equations	
MATH/COMP SCI/I SY E/STAT 525	Linear Optimization	
MATH 531	Probability Theory	
MATH 535	Mathematical Methods in Data Science	
MATH 551	Elementary Topology	
MATH 552	Elementary Geometric and Algebraic Topology	
MATH 561	Differential Geometry	
MATH 567	Modern Number Theory	
MATH/PHILOS 571	Mathematical Logic	
MATH 570	Fundamentals of Set Theory	
MATH 605	Stochastic Methods for Biology	

MATH/B M I/ BIOCHEM/ BMOLCHEM 609	Mathematical Methods for Systems Biology
MATH 616	Data-Driven Dynamical Systems, Stochastic Modeling and Prediction
MATH 619	Analysis of Partial Differential Equations
MATH 621	Introduction to Manifolds
MATH 623	Complex Analysis
MATH 627	Introduction to Fourier Analysis
MATH 629	Introduction to Measure and Integration
MATH/I SY E/ OTM/STAT 632	Introduction to Stochastic Processes
MATH 635	An Introduction to Brownian Motion and Stochastic Calculus
MATH/E C E 641	Introduction to Error-Correcting Codes
MATH 698	Directed Study
MATH 705	Mathematical Fluid Dynamics
MATH/STAT 709	Mathematical Statistics
MATH/STAT 710	Mathematical Statistics
MATH 716	Ordinary Differential Equations
MATH 718	Randomized Linear Algebra and Applications
MATH/COMP SCI/I SY E/STAT 726	Nonlinear Optimization I
MATH/COMP SCI/I SY E 728	Integer Optimization
MATH/COMP SCI/I SY E 730	Nonlinear Optimization II
MATH 735	Stochastic Analysis
MATH 740	Enumerative Combinatorics/Symmetric Functions
MATH 746	Topics in Ring Theory
MATH 747	Lie Algebras
MATH 748	Algebraic Number Theory
MATH 749	Analytic Number Theory
MATH 750	Homological Algebra
MATH 753	Algebraic Topology I
MATH 754	Algebraic Topology II
MATH 763	Introduction to Algebraic Geometry
MATH 764	Introduction to Algebraic Geometry
MATH 765	Differential Geometry
MATH/CBE/E C E 777	Nonlinear Dynamics, Bifurcations and Chaos
MATH 790	Masters Thesis

### Advanced Electives:

FOUR courses numbered 700 or above in Mathematics listed below may be taken as advanced elective courses.		12
MATH 703	Methods of Applied Mathematics 1	
MATH 704	Methods of Applied Mathematics-2	

MATH/ COMP SCI 714	Methods of Computational Mathematics I
MATH/ COMP SCI 715	Methods of Computational Mathematics II
MATH 719	Partial Differential Equations
MATH 717	Stochastic Computational Methods
MATH 720	Partial Differential Equations
MATH 721	A First Course in Real Analysis
MATH 722	Complex Analysis
MATH 725	A Second Course in Real Analysis
MATH/STAT 733	Theory of Probability I
MATH/STAT 734	Theory of Probability II
MATH 741	Abstract Algebra
MATH 742	Abstract Algebra
MATH 751	Introductory Topology I
MATH 752	Introductory Topology II
MATH 758	Introduction to Ergodic Theory and Dynamics
MATH 761	Differentiable Manifolds
MATH 770	Foundations of Mathematics
MATH 771	Set Theory
MATH 773	Computability Theory
MATH 776	Model Theory
<b>Total Credits</b>	<b>30</b>

Students in this program may not take courses outside the prescribed curriculum without faculty advisor and program director approval. Students in this program cannot enroll concurrently in other undergraduate or graduate degree programs.

## POLICIES

### GRADUATE SCHOOL POLICIES

The Graduate School's Academic Policies and Procedures (<https://grad.wisc.edu/acadpolicy/>) provide essential information regarding general university policies. Program authority to set degree policies beyond the minimum required by the Graduate School lies with the degree program faculty. Policies set by the academic degree program can be found below.

### NAMED OPTION-SPECIFIC POLICIES

#### PRIOR COURSEWORK

##### Graduate Credits Earned at Other Institutions

Students in the MA program may transfer no more than 14 credits of graduate coursework from other institutions. Coursework earned ten or more years prior to admission to a master's degree is not allowed to satisfy requirements.

##### Undergraduate Credits Earned at Other Institutions or UW-Madison

Refer to the Graduate School: Transfer Credits for Prior Coursework (<https://policy.wisc.edu/library/UW-1216/>) policy.

##### Credits Earned as a Professional Student at UW-Madison (Law, Medicine, Pharmacy, and Veterinary careers)

Refer to the Graduate School: Transfer Credits for Prior Coursework (<https://policy.wisc.edu/library/UW-1216/>) policy.

##### Credits Earned as a University Special Student at UW-Madison

Refer to the Graduate School: Transfer Credits for Prior Coursework (<https://policy.wisc.edu/library/UW-1216/>) policy.

#### PROBATION

Refer to the Graduate School: Probation (<https://policy.wisc.edu/library/UW-1217/>) policy.

#### ADVISOR / COMMITTEE

Students are recommended to meet with an advisor.

#### CREDITS PER TERM ALLOWED

15 credits

#### TIME LIMITS

Two years. Extensions have to be approved by the program.

Otherwise, refer to the Graduate School: Time Limits (<https://policy.wisc.edu/library/UW-1221/>) policy.

#### GRIEVANCES AND APPEALS

These resources may be helpful in addressing your concerns:

- Bias or Hate Reporting (<https://doso.students.wisc.edu/bias-or-hate-reporting/>)
- Graduate Assistantship Policies and Procedures (<https://hr.wisc.edu/policies/gapp/#grievance-procedure>)
- Hostile and Intimidating Behavior Policies and Procedures (<https://hr.wisc.edu/hib/>)
  - Office of the Provost for Faculty and Staff Affairs (<https://facstaff.provost.wisc.edu/>)
- Dean of Students Office (<https://doso.students.wisc.edu/>) (for all students to seek grievance assistance and support)
- Employee Assistance (<http://www.eao.wisc.edu/>) (for personal counseling and workplace consultation around communication and conflict involving graduate assistants and other employees, post-doctoral students, faculty and staff)
- Employee Disability Resource Office (<https://employee disabilities.wisc.edu/>) (for qualified employees or applicants with disabilities to have equal employment opportunities)
- Graduate School (<https://grad.wisc.edu/>) (for informal advice at any level of review and for official appeals of program/departmental or school/college grievance decisions)
- Office of Compliance (<https://compliance.wisc.edu/>) (for class harassment and discrimination, including sexual harassment and sexual violence)
- Office of Student Conduct and Community Standards (<https://conduct.students.wisc.edu/>) (for conflicts involving students)
- Ombuds Office for Faculty and Staff (<http://www.ombuds.wisc.edu/>) (for employed graduate students and post-docs, as well as faculty and staff)
- Title IX (<https://compliance.wisc.edu/titleix/>) (for concerns about discrimination)

Students should contact the department chair or program director with questions about grievances. They may also contact the L&S Academic Divisional Associate Deans, the L&S Associate Dean for Teaching and Learning Administration, or the L&S Director of Human Resources.

## OTHER

The Department of Mathematics cannot provide financial support for students in the master's degree in Mathematics–Foundations of Advanced Studies program.

## PROFESSIONAL DEVELOPMENT

### PROFESSIONAL DEVELOPMENT GRADUATE SCHOOL RESOURCES

Take advantage of the Graduate School's professional development resources (<https://grad.wisc.edu/pd/>) to build skills, thrive academically, and launch your career.

## PEOPLE

### PEOPLE

Please visit the Math Department website (<https://math.wisc.edu>) for a complete list of faculty (<https://math.wisc.edu/math-faculty/>) and instructional academic staff (<https://math.wisc.edu/academic-staff/>).