MATHEMATICS: FOUNDATIONS OF ADVANCED STUDIES, MA

REQUIREMENTS

MINIMUM GRADUATE SCHOOL REQUIREMENTS

Review the Graduate School minimum academic progress and degree requirements (http://guide.wisc.edu/graduate/#policiesandrequirementstext), 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 Credit Requirement	30 credits
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: https://policy.wisc.edu/library/UW-1244 (https://policy.wisc.edu/library/UW-1244/).
Overall Graduate GPA Requirement	3.00 GPA required. Refer to the Graduate School: Grade Point Average (GPA) Requirement policy: https://policy.wisc.edu/library/UW-1203 (https://policy.wisc.edu/library/UW-1203/).
Other Grade Requirements	None.
Assessments and Examinations	None.
Language Requirements	No language requirements.

REQUIRED COURSES

Code	Title	Credits
Core		
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
Basic Electives:		
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
Total Credits	**30**

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.