

M.S. in Applied Mathematics

Degree Requirements

Students with a baccalaureate degree in an area different from mathematics may be admitted and required by the department to take an individually-designed program of bridge courses that may include undergraduate courses before proceeding to the graduate curriculum. Such courses do not count towards a graduate degree.

The Master of Science in Applied Mathematics requires 30 credits: 15 credits in core courses, 15 credits in an area of specialization, of which six credits are required and nine credits are electives. Students must successfully complete at least 24 of these credits at the 600-level or higher, and no more than six credits at the 500-level will be counted towards the degree. Specific course requirements depend on the area of specialization. A master's thesis or a master's project is optional. (Advisor's permission is required)

Seminar: In addition to the minimum 30 degree credits required, all students who receive departmental or research-based awards must enroll every semester in MATH 791 Graduate Seminar.

M.S. in Applied Mathematics (courses only)

Code	Title	Credits
Core Courses		
MATH 613	Advanced Applied Mathematics I: Modeling	3
MATH 631	Linear Algebra	3
MATH 645	Analysis I ¹	3
MATH 656	Complex Variables I	3
MATH 689	Advanced Applied Mathematics II: Ordinary Differential Equations	3
Required Courses in Areas of Specialization		
Select one of the following Areas of Specialization:		6
Analysis		
MATH 745	Analysis II	
MATH 756	Complex Variables II	
Applied Mathematics		
MATH 614	Numerical Methods I	
MATH 690	Advanced Applied Mathematics III: Partial Differential Equations	
Computational Mathematics		
MATH 614	Numerical Methods I	
MATH 712	Numerical Methods II	
Mathematical Biology		
MATH 635	Analytical Computational Neuroscience	
MATH 637	Foundations of Mathematical Biology	
Electives		
Select three courses with approval of graduate advisor		9
Total Credits		30

¹ Students specializing in Applied Mathematics or Computational Mathematics may take MATH 545 Introductory Mathematical Analysis and MATH 546 Advanced Calculus, instead of MATH 645 Analysis I and 3 credits of elective.

M.S. in Applied Mathematics (Master's project)

Code	Title	Credits
Core Courses		
MATH 613	Advanced Applied Mathematics I: Modeling	3
MATH 631	Linear Algebra	3
MATH 645	Analysis I ¹	3
MATH 656	Complex Variables I	3
MATH 689	Advanced Applied Mathematics II: Ordinary Differential Equations	3
Project		

MATH 700B	Master's Project	3
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Required Courses in Areas of Specialization

Select one of the following Areas of Specialization:	6
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Analysis

MATH 745	Analysis II	
MATH 756	Complex Variables II	

Applied Mathematics

MATH 614	Numerical Methods I	
MATH 690	Advanced Applied Mathematics III: Partial Differential Equations	

Computational Mathematics

MATH 614	Numerical Methods I	
MATH 712	Numerical Methods II	

Mathematical Biology

MATH 635	Analytical Computational Neuroscience	
MATH 637	Foundations of Mathematical Biology	

Electives

Select three courses with approval of graduate advisor.	9
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Total Credits	33
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¹ Students specializing in Applied Mathematics or Computational Mathematics may take MATH 545 Introductory Mathematical Analysis and MATH 546 Advanced Calculus, instead of MATH 645 Analysis I and 3 credits of elective.

M.S. in Applied Mathematics (Master's thesis)

Code	Title	Credits
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Core Courses

MATH 613	Advanced Applied Mathematics I: Modeling	3
MATH 631	Linear Algebra	3
MATH 645	Analysis I ¹	3
MATH 656	Complex Variables I	3
MATH 689	Advanced Applied Mathematics II: Ordinary Differential Equations	3

Thesis**Required Courses in Areas of Specialization**

MATH 701B & 701B or MATH 701C	Master's Thesis and Master's Thesis Master's Thesis	6
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Select one of the following Areas of Specialization:	6
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Analysis

MATH 745	Analysis II	
MATH 756	Complex Variables II	

Applied Mathematics

MATH 614	Numerical Methods I	
MATH 690	Advanced Applied Mathematics III: Partial Differential Equations	

Computational Mathematics

MATH 614	Numerical Methods I	
MATH 712	Numerical Methods II	

Mathematical Biology

MATH 635	Analytical Computational Neuroscience	
MATH 637	Foundations of Mathematical Biology	

Electives

Select three courses with approval of graduate advisor.	9
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Total Credits	36
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¹ Students specializing in Applied Mathematics or Computational Mathematics may take MATH 545 Introductory Mathematical Analysis and MATH 546 Advanced Calculus, instead of MATH 645 Analysis I and 3 credits of elective.

Electives are chosen in consultation with a Departmental Graduate Advisor and consist of advanced courses in mathematics and advanced courses from biology, physics, computer science, and engineering, for example. Courses offered by appropriate departments at NJIT, RBHS, and Rutgers-Newark can be used as electives within the limits of the NJIT transfer policy. All elective courses must be approved by the graduate advisor.