

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)

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)

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 700	Master's Project	3
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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	33

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)

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

MATH 701	Master's Thesis	6
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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	36

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.