APPLIED MATHEMATICS (M.A.)

This degree is designed for students who are interested in applied mathematics or are interested in applying mathematics to areas outside of mathematics (e.g., biology, chemistry, computer science, economics, engineering, geology, medical science, physics, psychology, social science). The program is flexible in that it does not represent the teaching of any fixed body of knowledge. It does require two areas of concentration, one of these being the major in mathematics (pure and applied) with emphasis on the applicable subjects. The minor area is to be either in applied mathematics or in an area outside of mathematics (such as the above) to which the student is interested in applying mathematics. Mathematical methods are emphasized.

Admission Requirements

Admission to this program is contingent upon admission to the Graduate School (http://bulletins.wayne.edu/graduate/general-information/admission/).

Applicants for the Master of Arts in Applied Mathematics should have a good background in the area in which they are planning to apply mathematics, but a bachelor's degree in mathematics is not required. Applicants must have successfully completed course work equivalent to the following:

Code	Title	Credits
MAT 2010 & MAT 2020 & MAT 2030	Calculus I and Calculus II and Calculus III	12
MAT 2250	Elementary Linear Algebra	3
MAT 2150 or MAT 2350	Differential Equations and Matrix Algebra Elementary Differential Equations	3-4
MAT 5070	Elementary Analysis	4

At least 3 more credits in Mathematics at the 5000 level.

Credit accrued in courses such as the history of mathematics or the teaching of mathematics, in which the study of mathematics itself is not the primary purpose will not be counted toward this requirement.

Program Requirements

This program is usually offered as a Plan B master's degree option requiring twenty-nine credits of course work plus a three credit essay. However, Plan A (master's thesis) and Plan C (course work only) options are available with the approval of the Departmental Graduate Committee.

1. A minimum of thirty-two credits.
2. A minimum of twenty credits in mathematics courses not previously completed from the following list (additional courses may be approved on an individual basis):

Code	Title	Credits
MAT 5100	Numerical Methods I	3
MAT 5110	Numerical Methods II	3
MAT 5210	Advanced Calculus	4
MAT 5220	Partial Differential Equations	4
MAT 5230	Complex Variables and Applications	4
MAT 5280	Methods of Differential Equations	3
MAT 5350	Logical Systems I	4
MAT 5400	Elementary Theory of Numbers	3
MAT 5410	Applied Linear Algebra	4
MAT 5420	Algebra I	4
MAT 5430	Algebra II	4
MAT 5520	Introduction to Topology	3
MAT 5530	Elementary Differential Geometry and its Applications	3
MAT 5600	Introduction to Analysis I	4
MAT 5610	Introduction to Analysis II	3
MAT 5700	Introduction to Probability Theory	4
MAT 5710	Introduction to Stochastic Processes	3
MAT 5740	The Theory of Interest	3
MAT 5770	Mathematical Models in Operations Research	3
STA 5800	Introduction to Mathematical Statistics	4
MAT 5870	Methods of Optimization	3
MAT 6420	Advanced Linear Algebra	3
MAT 6500	Topology I	3
MAT 6600	Complex Analysis	2-4
STA 6830	Design of Experiments	3
MAT 7200	Ordinary Differential Equations	3
MAT 7210	Partial Differential Equations	3
MAT 7230	Finite Element Methods	3
MAT 7240	Advanced Partial Differential Equations	3
MAT 7400	Advanced Algebra I	3
MAT 7410	Advanced Algebra II	3
MAT 7500	Topology II	3
MAT 7510	Algebraic Topology I	3
MAT 7520	Algebraic Topology II	3
MAT 7600	Real Analysis I	3
MAT 7610	Real Analysis II	3
MAT 7700	Advanced Probability Theory I	3
STA 7810	Advanced Statistics Theory I	3
STA 5030	Statistical Computing and Data Analysis	3
STA 5830	Applied Time Series	3
STA 6840	Applied Regression Analysis	3
STA 7820	Advanced Statistics Theory II	3

3. A minimum of eight additional credits in the student's declared minor area.
4. A final oral examination. All students in Plan C are required to take this examination. Students in Plan A or Plan B may, upon recommendation of the thesis or essay advisor, be excused from the final oral examination by the Departmental Graduate Committee.
5. A public lecture on the thesis or essay for each student in Plan A or Plan B.
6. By the time twelve credits have been earned, each student must submit a Plan of Work, approved by a departmental advisor, to the director of the program. In the Plan of Work, the student must choose Plan A, Plan B, or Plan C. The Plan of Work must be approved by the Departmental Graduate Committee, at which time the student will be advanced to candidacy. Students are not allowed to take more than twelve credits in the program unless candidacy has been established.

Each student in this program is ordinarily required to write a project-type essay for three credits under the direction of a supervisor in the Department of Mathematics and an essay advisor from some department related to the minor area, both of whom must approve the essay. (If the chosen minor area is in applied mathematics, the adviser in the major area can be the same as the adviser in the minor area.) The selection of

advisors and topics must be approved by the Departmental Graduate Committee.

NOTE: The following courses cannot be applied towards this degree:

Code	Title	Credits
MAT 5070	Elementary Analysis	4

The following courses can only be applied towards requirement three for the minor in education:

Code	Title	Credits
MAT 6130	Discrete Mathematics	3
MAT 6140	Geometry: An Axiomatic Approach	3
MAT 6150	Probability and Statistics for Teachers	4
MAT 6200	Teaching Arithmetic, Algebra and Functions from an Advanced Perspective	3
MAT 6210	Teaching Geometry, Probability and Statistics, and Discrete Mathematics from an Advanced Perspective	3

Academic Scholarship: All course work must be completed in accordance with the regulations of the Graduate School (http://bulletins.wayne.edu/graduate/general-information/academic-regulations/) and the College of Liberal Arts and Sciences (http://bulletins.wayne.edu/graduate/college-liberal-arts-sciences/academic-regulations/).