MASTER OF APPLIED MATHEMATICS

The Master of Applied Mathematics program at Illinois Institute of Technology is a non-thesis professional master's degree program that provides graduates with mathematics training for technology-based jobs in business, industry, or government. Graduates develop state-of-the-art skills in modeling, statistics, and computation needed to solve real-world problems. The program requires students to learn writing and communication skills along with teamwork and project management skills. The program can typically be completed in 15 months, with three regular term semesters and one summer semester.

Admission Requirements

Students are required to have a bachelor's degree in mathematics, science, engineering, business, or an equivalent degree, with a minimum GPA of 3.0/4.0. Applicants are evaluated on an individual basis, but students are expected to have taken the following courses (or equivalent courses): Differential Equations, Matrix or Linear Algebra, Probability or Statistics, and a Computer Programming language (e.g. Matlab, C, Python, or R). Graduate Record Examination (GRE) scores must be submitted with the following minimum scores: 304 (quantitative + verbal), and 2.5 (analytical writing). Any applicant whose undergraduate degree was earned at an institution where the primary language of instruction is not English must submit Test of English as a Foreign Language (TOEFL), Pearson Test of English (PTE), or International English Language Testing System (IELTS) scores, which must satisfy Illinois Institute of Technology's English language proficiency test requirements (see the Graduate Admission section for more information). A professional statement of objectives must be submitted and at least one letter of recommendation is required.

Curriculum

Code	Title	Credit Hours
Applied Mathematics and Computational Science Core		**(9)**
MATH 475	Probability	3
MATH 522	Mathematical Modeling	3
or MATH 564	Regression	
MATH 577	Computational Mathematics I	3
Business and Professional Core		**(3)**
SCI 511	Project Management	3
or SCI 522	Public Engagement for Scientists	
Capstone Professional Experience		**(6-9)** [1]
MATH 523	Case Studies and Project Design in Applied Mathematics	3-6
or MATH 592	Internship in Applied Mathematics	
MATH 594	Professional Master's Project	3
or MATH 597	Reading and Special Projects	
Elective Courses		**(9-12)** [1]
Select a minimum of three courses from the following:		9-12
Advanced Computation		
MATH 461	Fourier Series and Boundary-Value Problems	3
or MATH 489	Partial Differential Equations	
MATH 565	Monte Carlo Methods	3
MATH 578	Computational Mathematics II	3
MATH 581	Finite Element Method	3
MATH 589	Numerical Methods for Partial Differential Equations	3
CS 595	Topics in Computer Science	3-12
MATH 481	Introduction to Stochastic Processes	3
MATH 485	Introduction to Mathematical Finance	3
MATH 542	Stochastic Processes	3
MATH 548	Mathematical Finance I	3
MATH 582	Mathematical Finance II	3
Statistical and Data Analytics		
MATH 527	Machine Learning in Finance: From Theory to Practice	3
MATH 546	Introduction to Time Series	3

MATH 563	Mathematical Statistics	3
MATH 564	Regression	3
MATH 565	Monte Carlo Methods	3
MATH 584	Mathematical Methods for Algorithmic Trading	3
MATH 567	Advanced Design of Experiments	3
MATH 569	Statistical Learning	3
MATH 574	Bayesian Computational Statistics	3
Discrete Mathematics and Optimization		
MATH 535	Optimization I	3
MATH 553	Discrete Applied Mathematics I	3
MATH 554	Modern Methods in Discrete Applied Mathematics	3
Total Credit Hours		**27-33**

Minimum degree credits required: 30

[1] Variable credit hours should sum up to a minimum 18 credit hours so that students fulfill a minimum 30 credits together with 12 credits of core courses.

Degree Requirements

All Graduate College requirements must be satisfied. Specific departmental requirements follow.

Credit Requirements

The student must complete 30 credit hours and maintain a 3.0/4.0 GPA. There are 21 credit hours of required, core courses. Nine credit hours of electives, selected in consultation with, and approval of, the program director are required. The program may include a maximum of nine credit hours at the 400-level.

Capstone Professional Experience

The capstone consists of a six credit hour course in case studies and project management or an internship in applied mathematics.

Master's Project

The project, which is three credit hours of MATH 594, is conducted under the supervision of a faculty member or an industrial partner.

Course Substitutions and Prerequisites

Course substitutions and needed prerequisite courses may be permitted, subject to the approval of the program director.