Applied Mathematics, Graduate Certificate (Boston)

Large streams of data have brought mathematical modeling to nearly every field and industry. More than ever, a deep understanding of the fundamentals and applications of these models is the differentiator between the success and failure of projects in statistics, machine learning, probabilistic modeling, and optimization. From constructing financial tools and optimizing supply chains, to computer-guided brain surgery and to quantum computing, a foundational understanding of advanced mathematics can give you the tools to create the ideas and technology that will drive the 21st century.

A graduate certificate in applied mathematics gives you the opportunity to study the fundamentals of statistical reasoning, mathematical modeling, and modern mathematical methods in a Tier 1 research department. Shorter than the full master's, the graduate certificate allows you to take up to four courses from the Department of Mathematics. Our courses cover a wide range of topics, from theory courses about the fundamental structures of mathematical objects, to project-based applied courses where students use modeling to solve research-level problems from academic and industry partners.

All applied mathematics courses are taught in the evening to accommodate working students. Mathematics and pure math courses also count toward this certificate.

Program Requirements

Complete all courses and requirements listed below unless otherwise indicated.

Core Requirements

Code	Title	Hours
Modeling		
Complete 4 semester hours from the following:		
MATH 5110	Applied Linear Algebra and Matrix Analysis	
MATH 5131	Introduction to Mathematical Methods and Modeling	
MATH 7203	Numerical Analysis 1	
MATH 7233	Graph Theory	
MATH 7241	Probability 1	
Statistics		
Complete 4 semester hours from the following:		
MATH 7243	Machine Learning and Statistical Learning Theory 1	
MATH 7343	Applied Statistics	

Electives

Code	Title	Hours
Complete 8 semester hours from subject area MATH, including but not limited to the following:		
MATH 5101	Analysis 1: Functions of One Variable	
MATH 5111	Algebra 1	
MATH 7202	Partial Differential Equations 1	
MATH 7205	Numerical Analysis 2	
MATH 7223	Riemannian Optimization	
MATH 7234	Optimization and Complexity	
MATH 7339	Machine Learning and Statistical Learning Theory 2	
MATH 7341	Probability 2	
MATH 7342	Mathematical Statistics	
MATH 7343	Applied Statistics	
MATH 7344	Regression, ANOVA, and Design	

Program Credit/GPA Requirements

16 total semester hours required
Minimum 3.000 GPA required