

Financial Mathematics (MR)

Master of Financial Mathematics Degree Requirements

Code	Title	Hours
Core Courses		26
FIM/ECG/MA/ MBA 528	Options and Derivatives Pricing	
ST 501	Fundamentals of Statistical Inference I	
ISE 711	Capital Investment Economic Analysis	
FIM 500	Career Development for Quants	
MA 547	Stochastic Calculus for Finance	
ST 502	Fundamentals of Statistical Inference II	
MA/FIM 548	Monte Carlo Methods for Financial Math	
FIM 601	Seminar in Financial Mathematics ¹	
ECG 766	Computational Methods in Economics and Finance	
Summer Internship/Project Course		1
Select one summer semester requirement of the following:		
FIM 650	Internship in Financial Mathematics	
FIM 675	Project in Financial Mathematics	
Elective Courses		9
See "Elective Courses" listed below		
Total Hours		36

¹ Students need to take FIM 601 (1 credit) in their second and third semesters for a total of 2 credits

Elective Courses

Code	Title	Hours
Select at least three courses listed below:		9
Risk Management Track		
FIM/MA 549	Financial Risk Analysis	3
ISE 519	Database Applications in Industrial and Systems Engineering	3
MBA 518	Enterprise Risk Management	3
MBA 521	Advanced Corporate Finance	3
Data Science for Finance Track		
ISE 519	Database Applications in Industrial and Systems Engineering	3
ST 503	Fundamentals of Linear Models and Regression	3
ST 516	Experimental Statistics For Engineers II	3
ST 540	Applied Bayesian Analysis	3
ST 590	Special Topics (Applied Time Series)	1-6
ST 562	Data Mining with SAS Enterprise Miner	3
ST 555	Statistical Programming I	3
Portfolio Management Track		
OR/MA 504	Introduction to Mathematical Programming	3

OR/ISE 505	Linear Programming	3
OR 506	Algorithmic Methods in Nonlinear Programming	3
MBA 523	Investment Theory and Practice	3
MBA 524	Equity Valuation	3
MA 531	Dynamic Systems and Multivariable Control I	3
ISE 519	Database Applications in Industrial and Systems Engineering	3

Actuarial Science Track

ECG 701	Microeconomics I	3
ECG 702	Microeconomics II	3
ECG/ST 750	Introduction to Econometric Methods	3
ECG/ST 751	Econometric Methods	3
ECG/ST 752	Time Series Econometrics	3
ECG/ST 753	Microeconometrics	3
MA/ST 747	Probability and Stochastic Processes II	3
MBA 518	Enterprise Risk Management	3

PhD Preparation Track

OR/ISE 505	Linear Programming	3
ECG/ST 751	Econometric Methods	3
ECG/ST 752	Time Series Econometrics	3
MA 523	Linear Transformations and Matrix Theory	3
MA 540	Uncertainty Quantification for Physical and Biological Models	3
MA/ST 546	Probability and Stochastic Processes I	3
ST 730		3
ST 740	Bayesian Inference and Analysis	3
MA 791	Special Topics In Real Analysis (Functional Analysis)	1-6

Other

CSC 505	Design and Analysis Of Algorithms	3
CSC 522	Automated Learning and Data Analysis	3
CSC 540	Database Management Concepts and Systems	3
CSC 541	Advanced Data Structures	3
CSC/MA 580	Numerical Analysis I	3
CSC/MA 583	Introduction to Parallel Computing	3
ISE 712	Bayesian Decision Analysis For Engineers and Managers	3
MBA 515	Enterprise Resource Planning Systems	3
MBA 526	International Finance	3
MA 515	Analysis I	3
MA 520	Linear Algebra	3
MA 532	Ordinary Differential Equations I	3
MA 534	Introduction To Partial Differential Equations	3
MA 544	Computer Experiments In Mathematical Probability	3
MA 555	Introduction to Manifold Theory	3
MA/BMA 573	Mathematical Modeling of Physical and Biological Processes I	3
MA/BMA 574	Mathematical Modeling of Physical and Biological Processes II	3
MA 584	Numerical Solution of Partial Differential Equations--Finite Difference Methods	3
MA 587	Numerical Solution of Partial Differential Equations--Finite Element Method	3

MA 715	Nonlinear Analysis	3
MA 723	Theory of Matrices and Applications	3
MA/ST 746	Introduction To Stochastic Processes	3
MA/ST 748	Stochastic Differential Equations	3
OR/ISE 501	Introduction to Operations Research	3
OR/MA 504	Introduction to Mathematical Programming	3
OR/E/MA 531	Dynamic Systems and Multivariable Control I	3
OR/MA 719	Vector Space Methods in System Optimization	3
OR/ISE 772	Simulation Optimization	3
OR/BMA/MA/ST 773	Stochastic Modeling	3
ST 505	Applied Nonparametric Statistics	3
ST 512	Statistical Methods For Researchers II	3
ST 556	Statistical Programming II	3
ST 563	Introduction to Statistical Learning	3

Accelerated Bachelor's/Master's Degree Requirements

The Accelerated Bachelors/Master's (ABM) degree program allows exceptional undergraduate students at NC State an opportunity to complete the requirements for both the Bachelor's and Master's degrees at an accelerated pace. These undergraduate students may double count up to 12 credits and obtain a non-thesis Master's degree in the same field within 12 months of completing the Bachelor's degree, or obtain a thesis-based Master's degree in the same field within 18 months of completing the Bachelor's degree.

This degree program also provides an opportunity for the Directors of Graduate Programs (DGPs) at NC State to recruit rising juniors in their major to their graduate programs. However, permission to pursue an ABM degree program does not guarantee admission to the Graduate School. Admission is contingent on meeting eligibility requirements at the time of entering the graduate program.

Full Professors

David Dickey

Paul Fackler

Sujit Ghosh

Kazufumi Ito

Negash Medhin

Tao Pang

Tom Vukina

Mark Walker

Richard Warr

Associate Professors

Min Kang

Andrew Papanicolaou

Denis Pelletier

Charlie Smith

Assistant Professors

Ilze Kalnina

Yerkin Kitapbayev

Dominykas Norgilas

Practice/Research/Teaching Professors

Wei Chen

Richard Ellson

Jeffrey High

Ram Valluru

Emeritus Faculty

Richard Bernhard

Peter Bloomfield

Jeffrey Scroggs

John Seater

Jim Wilson