

# MASTER OF MATHEMATICAL FINANCE

## Collaborative program with the Stuart School of Business

The objective of the Master of Mathematical Finance program is to provide individuals interested in pursuing careers in financial risk management with advanced education in theoretical, computational, and business aspects of relevant quantitative methodologies. This is a collaborative program between the Stuart School of Business and the Department of Applied Mathematics, and as such, it gives students the chance to benefit from the strength of both units. Students are required to complete a total of eleven semester courses, including eight core courses and three elective courses.

## Curriculum

Code	Title	Credit Hours
<b>Core Courses</b>		(24)
MSF 505	Futures, Options, and OTC Derivatives	3
MSF 526	Computational Finance	3
MSF 575	C++ with Financial Markets	3
MATH 542	Stochastic Processes	3
MATH 548	Mathematical Finance I	3
MATH 565	Monte Carlo Methods in Finance	3
MATH 582	Mathematical Finance II	3
MATH 586	Theory and Practice of Fixed Income Modeling	3
<b>Applied Mathematics Elective Courses</b>		(3)
Select a minimum of one course from the following:		3
CS 522	Advanced Data Mining	3
MATH 512	Partial Differential Equations	3
MATH 522	Mathematical Modeling	3
MATH 540	Probability	3
MATH 543	Stochastic Analysis	3
MATH 544	Stochastic Dynamics	3
MATH 545	Stochastic Partial Differential Equations	3
MATH 546	Introduction to Time Series	3
MATH 566	Multivariate Analysis	3
MATH 567	Advanced Design of Experiments	3
MATH 569	Statistical Learning	3
MATH 577	Computational Mathematics I	3
MATH 578	Computational Mathematics II	3
MATH 579	Complexity of Numerical Problems	3
MATH 587	Theory and Practice of Modeling Risk and Credit Derivatives	3
MATH 589	Numerical Methods for Partial Differential Equations	3
MATH 590	Meshfree Methods	3
<b>Finance Elective Courses</b>		(3)
Select a minimum of one course from the following:		3
MSF 524	Models for Derivatives	3
MSF 525	Term Structure Modeling and Interest Rate Derivatives	3
MSF 545	Structured Fixed Income Portfolios	3
MSF 546	Quantitative Investment Strategies	3
MSF 554	Market Risk Management	3
MSF 555	Credit Risk Management	3
MSF 566	Time Series Analysis	3
MSF 567	Bayesian Econometrics	3
MSF 574	.NET and Database Management	3
MSF 576	OOP and Algorithmic Trading Systems	3
MSF 577	High Frequency Finance	3

MSF 584	Equity and Equity Derivatives Trading	3
MSF 585	Foreign Exchange Market and Fixed Income Strategies	3
<b>Additional Elective Course</b>		<b>(3)</b>
Select one course <sup>1</sup>		3
Total Credit Hours		33

<sup>1</sup> One graduate level elective may be taken from outside the prescribed mathematical finance courses described above, provided that it is consistent with the Master of Mathematical Finance program objectives and has been approved by the program director prior to the student's registration.

### **Core Requirement**

All mathematical finance students must complete the eight core classes unless they have obtained written permission from their academic adviser to substitute an alternative class for a core class.

### **Course Substitutions**

To the extent that students have completed commensurate coursework or professional experience, substitutions to the required curriculum may be permitted, with the approval of the academic adviser.

### **Transfer Credit**

Students may also transfer up to two classes from a graduate program at another accredited university if the student has not used the classes to satisfy the requirements for a degree at the previous university. Additional classes may be transferred with the permission of the program director.

### **Prerequisite Courses**

Some students may be required to take prerequisite courses in mathematics, statistics, or computer programming before being admitted to a graduate course.