

# Course Catalog

## Mathematical Finance

### Faculty

[Eduardo Cabral Balreira, Ph.D.](#) , Professor, Mathematics; Director

[Julio Roberto Hasfura-Buenaga, Ph.D.](#) , Associate Professor, Mathematics

[John H. Huston, Ph.D.](#) , Professor, Economics

[Ricardo Manuel Santos, Ph.D.](#) , Associate Professor, Economics

[Eugenio Dante Suarez, Ph.D.](#) , Associate Professor, Finance and Decision Sciences

[Shage Zhang, Ph.D.](#) , Associate Professor, Finance and Decision Sciences

### Overview

The Mathematical Finance major is an interdisciplinary study of financial markets. Increasingly, firms of all types, and financial institutions in particular, rely on sophisticated mathematical models to understand financial markets, to evaluate financial instruments, and to measure and manage risk. To understand and utilize these models, students need specific capabilities that can be only gained from study in the fields of economics, finance, and mathematics. The major is specifically designed for students considering graduate studies and careers in Finance, Applied Financial Economics, Mathematical Finance, Applied Mathematics, or Actuarial Science.

### Requirements

#### The Major

The requirements for the degree of Bachelor of Science with a major in Mathematical Finance are as follows:

##### 1. Required Courses

ACCT 1301	Fundamentals of Financial Accounting
FNCE 3301	Corporate Finance
ECON 1311	Principles of Microeconomics
ECON 1312	Principles of Macroeconomics

ECON 3325	Intermediate Microeconomics
ECON 4367	Advanced Microeconomic Theory
ECON 4370	Econometrics
MATH 1311	Calculus I
MATH 1312	Calculus II
MATH 2321	Calculus III
MATH 1320 or BAT 2301	Statistical Methods or Statistics for Business and Economics*
MATH 3370	Financial Mathematics
MATH 3316	Differential Equations and Linear Algebra
* MATH 3334	Probability, may be substituted for MATH 1320/BAT 2301. That substitution is essential for those seeking a career in actuarial science.

## 2. Three Additional Elective Courses from the following:

FNCE 3351/ECON 3356	Financial Institutions and Markets
FNCE 3352	Investments I
FNCE 3353	Investments II
FNCE 3363	Student Managed Fund I
FNCE 3361/ ECON 3361	International Finance
FNCE 3362	Equity Valuation
FNCE 4362	Derivatives

## 3. Completion of all other required elements of the Pathways curriculum and at least 120 credit hours.

For full admission into the major, students must have credit for Calculus II (MATH 1312), Financial Accounting (ACCT 1301) and Principles of Macroeconomics (ECON 1312) with a grade of at least a C in each. Students who have not yet completed those three classes may still declare the major but are “provisionally accepted.”

## Courses

### MFIN-3-71 Internship

Internships may be arranged with businesses, nonprofit institutions, and government agencies. The job must include analysis based on tools learned in the course of completing the MFIN major. The workload requirements

are expected to be similar to those of typical MFIN courses carrying the same number of hours of credit. Must be taken pass/fail. Prerequisites: ACCT 1301, ECON 1312, MATH 1312 and permission of the program chair.

---