Course Catalog

Mathematical Finance

Faculty

Eduardo Cabral Balreira, Ph.D., Associate Professor, Mathematics
Julio Roberto Hasfura-Buenaga, Ph.D., Associate Professor, Mathematics
John H. Huston, Ph.D., Professor, Economics; Director
Ricardo Manuel Santos, Ph.D., Associate Professor, Economics
Eugenio Dante Suarez, Ph.D., Associate Professor, Finance and Decision Sciences
Shage Zhang, Ph.D., Assistant 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

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACCT 1301</td>
<td>Fundamentals of Financial Accounting</td>
</tr>
<tr>
<td>FNCE 3301</td>
<td>Financial Administration of Business Firms</td>
</tr>
<tr>
<td>ECON 1311</td>
<td>Principles of Microeconomics</td>
</tr>
<tr>
<td>ECON 1312</td>
<td>Principles of Macroeconomics</td>
</tr>
</tbody>
</table>
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  Statistical Methods*
MATH 3370  Mathematical Finance
MATH 3316  Differential Equations and Linear Algebra

* MATH 3334  Probability, may be substituted for MATH 1320. 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  Investment Principles and Analysis
FNCE 3353  Student Managed Fund I
FNCE 3361/ ECON 3361  International Finance
FNCE 4351  Financial Management and Policy
FNCE 4362  Derivatives

3. Completion of all other required elements of the Pathways curriculum and at least 124 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.