

ATILIM UNIVERSITY
MATHEMATICS DEPARTMENT
MATHEMATICAL FINANCE CERTIFICATE PROGRAM

AIM OF THE PROGRAM

Mathematical finance is the use of mathematical methods to solve financial problems. It draws on the tools of probability, statistics, stochastic processes, and economic theory. Traditionally, investment banks, commercial banks, insurance companies, corporate treasury, and regulatory agencies use financial math methods to solve problems such as securities valuation, portfolio structuring, risk management, and scenario simulation. In recent years, the employment of professionals with financial mathematics knowledge has been increasing in these institutions and organizations.

Mathematical Finance certificate program aims to provide a foundation in financial instruments, how to value investments, and how to manage risks. Certified students will be equipped with knowledge of stochastic processes, probability, statistics, and computational mathematics as well as the institutional workings of financial markets. The Mathematical Finance certificate program offered by the Department of Mathematics allows students to

- develop perspectives on key issues and emerging theories in mathematical finance;
- know modeling stochastic processes, financial instruments, pricing, and hedging;
- develop an understanding of the quantitative methodologies and techniques that are important for various jobs in banks and other financial institutions;
- and aims to develop personal skills including logical reasoning, quantitative analysis, and presentation of technical results.

STRUCTURE OF THE PROGRAM

Mathematical Finance Certificate Program consists of 11 courses and Summer Internship. 5 courses in the program are elective courses in the mathematics department program, and 4 courses are compulsory. The other 2 courses of the program are those given by the Departments of Economics and Business Administration.

CONDITIONS TO START IN THE PROGRAM

A student can apply to the program from the beginning of the third semester. The following are required to start the program:

1. Having a cumulative grade point average of at least 2.00,
2. Having received at least CC grades from Math 135 and Math 136 courses,
3. To apply in writing to the head of the Department of Mathematics.

COURSES AND CERTIFICATION REQUIREMENTS

Students who successfully complete the following courses and have an average of at least 2.00 in Math 313, Math 316, Math 417, and Math 437 receive the "Mathematical Finance Certificate".

Mathematics Department Compulsory Courses

1. MATH231 Linear Algebra I
2. MATH251 Advanced Calculus I
3. MATH262 Ordinary Differential Equations
4. MATH392 Probability Theory and Statistics

Mathematics Department Elective Courses

1. MATH313 Introduction to Mathematical Finance
2. MATH316 Mathematics of Financial Derivatives
3. MATH380 Numerical Analysis for Engineers (or MATH381 Numerical Analysis)
4. MATH417 Computational Methods of Mathematical Finance
5. MATH437 Basic Statistical Methods and Financial Applications

6. MATH499 Summer Practice NC

Courses Taken from Other Departments

1. ECON211 Fundamentals of Economics
2. MAN304 Financial Management II

Suggested Course Order

3. Year

FALL	SPRING
MATH313 Introduction to Mathematical Finance	MATH316 Mathematics of Financial Derivatives

4. Year

FALL	SPRING
MATH417 Computational Methods of Mathematical Finance	MATH437 Statistical Methods and Financial Applications