



Ollscoil Chathair
Bhaile Átha Cliath
Dublin City University

DÁMH NA HEOLAÍOCHTA AGUS SLÁINTE
FACULTY OF SCIENCE AND HEALTH

Master of Science Financial Mathematics

(Full-time) PAC Code: DC704

(Part-time) PAC Code: DC761

The MSc in Financial Mathematics equips students with the theoretical and practical tools that they need to succeed in quantitative roles in the Banking and Finance industry.

Since its launch in 1996, this one-year programme covers a comprehensive curriculum in stochastic and computational methods applied to Finance. Combining theoretical rigour with practical relevance, the programme focuses on three main themes:

- Asset Pricing and Derivatives Valuation;
- Optimal Investment and Dynamic Trading;
- Risk Management and Hedging Techniques.

These themes are developed through three main approaches:

- Analytical solutions, which provide exact, efficient, and intuitive formulas for pricing and investment problems;
- Numerical methods, which yield fast and accurate results in complex settings where analytical formulas are unavailable;
- Simulation techniques, which offer robust and flexible solutions to high-dimensional or otherwise intractable models.

Structure of course

The first semester covers modern arbitrage theory, which underpins the pricing and hedging of derivatives, stochastic calculus, which provides a unifying framework for optimal investment and asset pricing, and simulation methods. The four autumn modules are:

- Probability and Finance I;
- Probability and Finance II;
- Simulation for Finance;
- Partial Differential Equations.

The Spring semester focusses on application, including portfolio choice in continuous time, the term-structure of interest rates, optimization and time-series models.

The core modules are:

- Stochastic Finance;
- Fixed Income Securities.

Students choose two optional modules among:

- Financial Engineering;
- Optimization;
- Time Series.

The course of studies concludes with a personal project, individually supervised, completed during the summer.

The MSc in Financial Mathematics also offers a part-time option, particularly suited to mature students who are working full-time, which allows two years to complete the curriculum. The autumn of the first year covers the two modules of Probability in Finance, leaving the other two modules to the second year. The spring of the first year covers Stochastic Finance and Fixed Income Securities, leaving optional modules to the second year.

Upon successful completion of this programme Non-EEA graduates are eligible to apply for the Third Level Graduate Programme to obtain a visa for up to two years, for the purpose of seeking employment.

Minimum entry requirements

The normal entry requirement is a 2.1 grade or equivalent in Mathematics, Statistics, Physics, Engineering, Economics, or a related discipline with a strong quantitative component. Candidates must supply official transcripts of all previous academic studies showing their performance in each subject.

Non-native speakers of the English language must satisfy the University of their competency in the English language.

See www.dcu.ie/registry/english.shtml for further details of the English competency test.

Applications are accepted on the PAC website at www.pac.ie/dcu

Find out more

www.dcu.ie/DC761

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Find out more →
www.dcu.ie/