

Financial Mathematics

CAO code: DN200 Option: Mathematical, Physical & Geological Sciences (MPG)

Sample pathway for a degree in Financial Mathematics *

YEAR
1

ENGAGE WITH THE PRINCIPLES

MATHEMATICS

Topics include:

- ▶ Calculus in the Mathematical and Physical Sciences
- ▶ Linear Algebra in the Mathematical and Physical Sciences
- ▶ Numbers and Functions
- ▶ Mathematical Analysis

STATISTICS

Topics include:

- ▶ Statistical Modelling

APPLIED & COMPUTATIONAL MATHEMATICS

Topics include:

- ▶ Applications of Differential Equations

- ▶ Two Elective modules
- ▶ One Small-Group Project

YEAR
2

CHOOSE YOUR SUBJECTS

FINANCIAL MATHEMATICS

Topics include:

- ▶ Foundations of Financial Mathematics
- ▶ Business Economics
- ▶ Calculus of Several Variables
- ▶ Linear Algebra
- ▶ Theory of Games
- ▶ Principles of Finance

STATISTICS

Topics include:

- ▶ Inferential Statistics
- ▶ Probability Theory

APPLIED AND COMPUTATIONAL MATHEMATICS

Topics include:

- ▶ Computational Science
- ▶ Vector Integral & Differential Equations

- ▶ Two Elective modules

YEAR
3

FOCUS ON YOUR CHOSEN SUBJECT

FINANCIAL MATHEMATICS – Topics include:

- ▶ Fundamentals of Actuarial and Financial Mathematics
- ▶ Computational Finance
- ▶ Partial Differential Equations
- ▶ Metric Spaces
- ▶ Measure Theory and Integration
- ▶ Time Series
- ▶ Stochastic Models
- ▶ Advanced Corporate Finance
- ▶ Linear Models
- ▶ Dynamical Systems

YEAR
4

REFINE YOUR KNOWLEDGE

FINANCIAL MATHEMATICS – Topics include:

- ▶ Actuarial Reporting
- ▶ Statistical Data Mining
- ▶ Quantitative Methods
- ▶ Bayesian Analysis
- ▶ Advanced Computational Science
- ▶ Financial Economics
- ▶ Monte Carlo Inference
- ▶ Stochastic Analysis

BSc (Honours) Financial Mathematics

MSc (Taught)

- ▶ MSc Mathematics
- ▶ MSc Mathematical Science
- ▶ MSc Statistics
- ▶ MSc Actuarial Science
- ▶ MSc Business Analytics
- ▶ MSc Data Analytics
- ▶ MSc Quantitative Finance

PhD

- ▶ Graduates can pursue a PhD in algorithmic trading, or stochastic differential equations, for example.

Industry

- ▶ Quantitative positions in the financial sector
- ▶ Risk modelling in banking and insurance
- ▶ Computing in business, technology, research and academia
- ▶ Trainee Actuary

Conversion Courses

- ▶ Professional Master in Education (PME)
- ▶ MSc Computer Science (conversion)



- Develop strong mathematical, problem-solving and analytical skills used in banking and finance
- Learn the mathematical theories that underpin financial models, as well as computational expertise in the algorithms that price financial products

“ The course provides a thorough preparation on the main topics of Mathematical



Finance. The contents of the various modules do not neglect any aspect of the wide range of skills required to work in today's financial sector, from the rigour required by the purest Mathematical Theories to the most important applications of Bayesian Statistics, Stochastic Analysis and Numerical Methods needed by practitioners in the Financial Industry. According to the 2016 QS World University Rankings by Subject, Mathematics, Statistics and Operational Research at UCD are ranked 1st in Ireland

Dr Adamaria Perrotta,
Staff

*See pages 4 and 5 for information on the terminology used above. Potential combinations shown here are examples only and are not guaranteed by UCD. Topics are subject to change each year.

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