MONASH University

MASTER OF FINANCIAL MATHEMATICS

monash.edu/science

GROUP OF EIGHT AUSTRALIA

MASTER MATHS AND FIND YOUR NICHE IN FINANCE

Across the world talented mathematicians are being professionally pursued by banks and other financial institutions to help manage the increasingly complex and more risky financial sector. Particularly valuable today are those who combine exceptional skills in the science of maths with exceptional fluency in the language of finance.

This is where the new Master of Financial Mathematics comes in – the only masters course of its kind offered in Melbourne, Victoria.

This is a mathematics course designed for application in a business context, which is why you'll study it within the well-regarded Monash School of Mathematics.

Is the degree suited to me?

We have designed the Master of Financial Mathematics for graduates from across the globe with an aptitude and passion for mathematics and statistics, as well as a keen interest in finance and insurance.

This is a highly specialised degree for students seeking to find a niche within the finance sector. It is not a course for generalists, but for those wishing to move into the professional world of quantitative analysis – and towards the career opportunities such a role can lead to.

Who will be teaching me?

You will be taught by mathematicians who are pioneering research in areas such as probability, stochastic processes and statistics, and who have an impressive range of connections across the financial and insurance industries.

Industry projects and placements are a central component of the degree, meaning you will gain crucial experience in the workplace as part of the qualification.

About the School of Mathematics at Monash University

The School of Mathematics sits within the world-leading Faculty of Science at Monash University.

This vibrant, dynamic and successful School has many specialists in the area of financial mathematics and is also home to the Monash Centre for Quantitative Finance and Investment Strategies. With mathematics as the fundamental underpinning of so many subject areas, sectors and disciplines, the School is also building ever stronger collaborations with relevant industries, including the financial sector.

WHAT WILL I STUDY?

The length of your course, and the units you study within the course, will be influenced by your level of qualification already achieved in prior study. If you have previously completed a:

DEGREE WITH MATHEMATICS CONTENT

You will complete units in parts A, B & C

DURATION
2 years full-time study

If you have completed an undergraduate degree (with strong mathematical content) with a high credit average

OR

A qualification or experience that the faculty considers equivalent or a satisfactory substitute for the above.

DEGREE IN MATHEMATICS

You will complete units in parts B & C

DURATION
1.5 years full-time study

If you have completed an undergraduate degree in mathematics with a high credit average

OR

A graduate certificate/diploma with strong mathematical content with a high credit average

OR

A qualification or experience that the faculty considers equivalent or a satisfactory substitute for the above.

ADVANCED MATHEMATICS DEGREE

You will complete units in part B

DURATION
1 year full-time study

If you have completed a degree in mathematics

AND

Honours in financial mathematics with a high credit average

OR

Relevant industry experience

OR

A qualification or experience that the faculty considers equivalent or a satisfactory substitute for the above.

CAREER PROSPECTS

The linking of theory with hands-on experience in the financial sector offered by the Masters of Financial Mathematics means that our graduates are highly sought after by the banking, insurance and other related industries. Graduates are likely to enter specialist careers in research departments within banks, insurance and consultancy firms or in derivatives valuation and portfolio management within investment houses.

"Nowadays, quantitative analysis – which involves knowledge in finance, maths and programming – is a critical component in the modern financial industry in response to both the increasing complexity of financial derivatives and the increasing regulation of the sector.

"There are not many degrees like this one so relevant to financial industry practice."

OSCAR TIAN
Senior Consultant, Pricing and Risk Analyst and Senior Lecturer at Monash University

PART A

Two compulsory units (total of 12 points):

- Random processes in the sciences and engineering (6 pts)
- Financial mathematics (6 pts)
- Statistics of stochastic processes (6 pts)

Plus two units from the following electives (total of 12 points):

- Principles of Econometrics (6 pts)
- Applied Insurance Methods (6 pts)
- Financial Econometrics (6 pts)
- Introduction to computational Mathematics (6 pts)
- Real Analysis (6 pts)
- Computational Linear Algebra (6 pts)
- Optimisation and Operations Research (6 pts)
- Metric spaces, Banach Spaces and Hilbert Spaces (6 pts)
- Time Series and Random processes in linear systems (6 pts)

PART B

Six compulsory units (total of 36 points):

- Stochastic Calculus and Mathematical Finance (6 pts)
- Quantitative Risk Management (6 pts)
- Interest Rate Modelling (6 pts)
- Computational Methods in Finance (6 pts)
- Partial Differential Equations in Finance (6 pts)
- Quantitative Trading and Market Microstructure (6 pts)

Plus two units from the following electives (total of 12 points):

- Financial Econometrics 2 (6 pts)
- The Theory of Martingales in Discrete Time (6 pts)
- Markov Chains and Random Walks (6 pts)
- Statistical Learning in Finance (6 pts)
- Machine Learning (6 pts)
- Market Microstructure (6 points)

PART C

A total of 24 points from the following:

- Industry Placement (24 pts)
- Industry Research Project (24 pts)
- Industry Placement (12 pts) Or Industry Research Project (12 pts) plus two units, not previously completed, from:
- Global Financial Markets (6 pts)
- Statistical Data Modelling (6 pts)
- Machine Learning (6 pts)
- Algorithms and programming foundations (6 pts)
- Funds Management (6 pts)
- Treasury and Financial Markets (6 pts)

COURSE INFORMATION

DURATION

- 2 years full-time
- 4 years part-time

INTAKE

- Semester 1 or 2
  (students completing parts A, B & C)
- Semester 1 or 2
  (students completing parts B & C)

CAMPUS

On campus: Clayton

EXIT POINTS

- Graduate Diploma in Financial Mathematics (48 Points)
- Graduate Certificate in Financial Mathematics (24 points)

CREDIT POINTS

96

MINIMUM ENTRY REQUIREMENTS

Applicants must have completed an undergraduate degree (equivalent to an Australian undergraduate degree) with a strong mathematical content* with at least a 65% average or equivalent GPA as determined by the faculty.

RECOGNITION OF PRIOR LEARNING

Students may be eligible for up to 48 credit points for previous relevant graduate level studies or honours degree. Exemptions up to 24 points may be granted for previous relevant undergraduate studies.

HOW TO APPLY

For full course entry requirements and how to apply visit **study.monash/courses**

Course Code: S6001
CRICOS Code: 086157A

*i.e completion of units of mathematics with an emphasis on multivariable caculus, linear algebra, probability, statistics and differential equations.** some units may be subject to prerequisites and/or hurdle requirements, please refer to the course handbook for more information

4 REASONS TO STUDY THE MASTERS OF FINANCIAL MATHEMATICS AT MONASH

GROWING NEED FOR TALENT

There is a growing need for talented mathematicians who can put their specialist skills to use in creating new and innovative tools and systems and solving potential problems in the increasingly intricate world of finance and insurance.

VICTORIA'S ONLY TAUGHT POSTGRADUATE DEGREE

The only taught postgraduate degree of its kind offered in Victoria, the course recognises the analytic, quantitative and computational skills required by the finance and insurance sectors.

WORLD-CLASS SCHOOL

You will join a world-class school of mathematical sciences that combines cutting-edge academic research with extensive industry knowledge and experience.

A COURSE FOR GLOBAL PROFESSIONALS

You will sharpen your skills and develop the knowledge that organisations are looking for all over the world. And if you do end up working in Australia, it might be for the sort of global financial institutions whose employees travel widely.

"Financial mathematics is one of the few fields of study where mathematics is applied at such a senior industry level. By choosing the Master of Financial Mathematics you will access jobs in the financial industry that combine the best of both worlds: the interest and challenge of working in the financial markets, while remaining in close contact with cutting-edge mathematical knowledge."

PROFESSOR GREGOIRE LOEPER
Director, Monash Centre for Quantitative Finance and Investment Strategies
Senior Scientific Advisor, BNP Paribas CIB

MEET THE COURSE DIRECTOR, DR IVAN GUO

Dr Ivan Guo is a Senior Lecturer in the School of Mathematics, the Deputy Director of the Monash Centre for Quantitative Finance and Investment Strategies, and the Course Director for the Master of Financial Mathematics program. He is a specialist in the field of Financial Mathematics and Stochastic Processes.

Ivan completed his PhD in Mathematics at the University of Sydney. His industry experience includes working at the National Australia Bank in the Market Risk Quantitative Support division. Prior to joining Monash, he held research positions at the University of Sydney and the University of Wollongong. Dr Guo is also a member the Australian Mathematical Olympiad Committee, currently serving as the Chair of the Senior Problems Committee.

MONASH University

Further information

monash.edu/science

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