

# Master of Philosophy (by Coursework and Dissertation) specialising in Mathematical Finance [CM033BUS18]

**Convener:** Associate Professor D Taylor

## Entrance requirements:

There are limited places on the degree and admission is based on merit.

Applicants must have an Honours (or four-year equivalent) degree from one of the Faculties of Science, Commerce or Engineering.

Applicants should be aware that this is predominantly a mathematical degree and preference will be given to candidates with a strong background in a mathematical science.

Successful completion of one year of Mathematical Statistics and *at least* two years of Mathematics, with exposure to multivariate calculus, real analysis and linear algebra is the *minimum* mathematical requirement.

Admission is at the discretion of the admissions committee and meeting the minimum requirements does not guarantee admission.

Once admitted, candidates must pass or gain credit for the pre-courses to continue with the degree.

## Qualification outline:

The Division of Actuarial Science in the School of Management Studies in conjunction with the Department of Statistical Sciences offers an MPhil in Mathematical Finance by coursework and dissertation. This degree is mathematical in nature and requires a high level of skill in statistics and mathematics. The qualification is intensive and challenging, and combines training in applied mathematical, statistical and computing skills with a solid understanding of financial markets and asset pricing theory. It consists of 2 preliminary courses that run 4 weeks prior to the start of the rest of the degree, 150 credits of coursework and a minor dissertation. Graduates of this degree are well-equipped for careers in the most sophisticated areas of investment banking, asset management, risk management, or any career where a solid quantitative finance or financial engineering background is useful. They may also pursue doctoral research in quantitative finance. The programme has been designed to accommodate students from a wide variety of backgrounds.

## Duration:

The degree is only offered full-time over one year; it begins in January and ends in January of the following year. With the approval of their supervisor, a student may be permitted to re-register for the dissertation in the year following coursework, but fees will be payable.

## Prescribed curriculum/programme structure:

Course code	Course name	HEQF Credits	HEQF Course Level
<b>Non-credit bearing preliminary courses</b>			
STA5089Z	Basics of Mathematical Statistics (compulsory)	0	9
DOC5038Z	Mathematical Computing Skills (compulsory)	0	9
<b>First Semester</b>			
DOC5045F	Introduction to Finance and Derivatives (compulsory)	0	8
DOC5032F	South African Financial Markets (compulsory)	15	8
DOC5046F	Stochastic Calculus for Finance I (compulsory)	30	9
DOC5043F	Numerical Methods in Finance I (compulsory)	30	9
<b>Second Semester</b>			
DOC5047S	Stochastic Calculus for Finance II (compulsory)	30	9
DOC5048S	Numerical Methods in Finance II (compulsory)	30	9
DOC5044S	Risk Management of Financial Instruments	15	9
<b>Research:</b>			
DOC5005W	Minor Dissertation (not exceeding ten thousand words)	60	9
<b>Total:</b>		<b>210</b>	

Or elective(s) approved by the programme convener.

The objective of the courses DOC5045F, STA5089Z and DOC5038Z is to harmonize knowledge of the fundamental tools in statistics, computational mathematics and finance needed to successfully follow the remainder of the programme. A full course (30 HEQF credits) typically consists of 48 contact hours. However, the specific organisation of each course will be adapted according to the learning needs.

## Assessment:

To qualify for the degree, the student should achieve the following:

Pass or gain credit for the pre-courses, STA5089Z and DOC5038Z, and the co-requisite course, DOC5045F.

Pass courses totalling (at least) 150 credits (including the compulsory courses).

Pass the dissertation, which carries an additional 60 credits.

## Readmission rules:

Any candidate who fails any of the courses required for successful completion of the degree, during the first year of registration, will be allowed to repeat a maximum of two courses in the following academic year.

Courses may only be repeated once.

DOC5005W, DOC5045F, STA5089Z and DOC5038Z may not be repeated.

## Distinction rules:

The degree will be awarded with distinction if the candidate obtains a weighted average mark of at least 75% for the coursework component of the degree, and at least 75% for the dissertation.

## Further specific administrative requirements:

In addition to completing the University application form, applicants must submit a Curriculum Vitae. Application for the following year must be made by 31 October.