



Programme Specification

Awarding Body/Institution	Queen Mary University of London
Teaching Institution	Queen Mary University of London
Name of Final Award and Programme Title	MSci Financial Mathematics with Professional Placement
Name of Interim Award(s)	CertHE, DipHE, BSc
Duration of Study / Period of Registration	5 years
QM Programme Code / UCAS Code(s)	GN2H
QAA Benchmark Group	Mathematics, statistics and operational research
FHEQ Level of Award	Level 7
Programme Accredited by	
Date Programme Specification Approved	
Responsible School / Institute	School of Mathematical Sciences

Schools which will also be involved in teaching part of the programme

School of Business & Management

Institution(s) other than Queen Mary that will provide some teaching for the programme

Programme Outline

The MSci in Financial Mathematics is a 5-year taught programme which combines all the elements of a generalist undergraduate mathematics with business management degree with a number of specialist modules in mathematical finance and related areas and a one year professional placement. Modules taken in the final year are all at Master's level, and most are shared with our MSc degrees in Mathematics and Mathematical Finance. This programme is designed for students who wish to combine their academic development with a period of practical skills development through a one year professional placement.

On completion of the programme, students will have gained a solid understanding of all the key areas of pure and applied mathematics, together with more specialist knowledge of financial mathematics, numerical methods and computing, and elements of business and management, and will be well-positioned to apply for quantitative roles in the financial services sector and elsewhere.

In the first two years, students will gain a solid foundation in all the important areas of pure and applied mathematics, attending many of the same modules as students on our traditional mathematics degree programmes. However, in the penultimate and final years, students will also take a series of specialist modules. These comprise not only modules on financial mathematics, but also computer programming and numerical methods – skills that are in particularly high demand in the finance sector.

Additionally, in the final year, students will undertake a research project in financial mathematics, introducing them to some of the latest, cutting-edge research in the field.

Aims of the Programme

This programme aims to give students the knowledge and skills that they will need to pursue successful careers in the finance sector (investment and commercial banking, financial markets, fund management, insurance, hedge funds, etc.). However, it has sufficient general content in mathematics to prepare students for any career where a good mathematics degree is required, as well as for future academic research in mathematics or mathematical finance.

It is particularly targeted at students with strong analytical skills, who want to develop these further, and learn how to apply them in practice in mathematical finance. The programme contains a range of both general and specialist modules, covering not just mathematics and mathematical finance, but also numerical methods and computing. These applied skills are in particular demand from employers.

What Will You Be Expected to Achieve?

Academic Content:	
A 1	A solid foundation in all the key areas of pure and applied mathematics, with special emphasis on mathematical finance.
A 2	The techniques and tools of financial modelling.
A 3	Numerical methods and computer programming.
A 4	Application of mathematical and statistical knowledge in a business environment.

Disciplinary Skills - able to:	
B 1	Solve mathematical problems using a range of analytical tools.
B 2	Understand how theoretical techniques can be used to solve problems in applied finance.
B 3	Write computer programs to find numerical solutions to applied problems.
B 4	Communicate clearly in writing and through presentations in a style and manner appropriate to the subject and audience.

Attributes:	
C 1	Integrate knowledge from many different fields.
C 2	Choose the appropriate mathematical tools for solving particular problems.

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C3	Develop independent research skills by undertaking a substantial project dissertation.
C4	Work individually and in groups as a participant who contributes effectively to the group's task.
C5	Demonstrate initiative and resilience in meeting challenges.

QMUL Model Learning Outcomes - Level 4:	
D1	Identify and discuss their own career aspirations or enterprise skills and knowledge and how they impact on others
D2	Identify and discuss what their own role in their programme and/or subject discipline might mean to them for future
D3	

How Will You Learn?

Throughout the four year programme, you will attend lectures in a range of subject areas. Many lecturers make their lecture notes and other resources available to students via our online learning environment, QMplus.

You will also attend examples classes and tutorials, where you can receive one-to-one support in learning how to solve mathematical problems. For the computing modules, you will undertake practical assignments in the computer laboratories, again with plenty of personal support.

In addition, you will be expected to spend a considerable amount of your own time in independent study, reviewing the material covered in the lectures, and working through various coursework assignments to help you fully understand how to apply your new knowledge.

In your final year, you will undertake a project culminating in the preparation of a written dissertation, giving you experience of undertaking independent research in a field of interest to you. During this period, you will meet regularly with your project supervisor to discuss your progress and future research plans.

How Will You Be Assessed?

Assessment is normally primarily by written examination but for some modules may also include continuous assessment of coursework consisting of solutions to exercises, which are set weekly or fortnightly, and/or one or more tests. Summative coursework assessment or tests may typically contribute up to 10% of the assessment. Assessment of project modules is normally by a project report, presentation and, at the examiners' discretion, an oral examination. The placement year will be assessed by the university on the basis of employer feedback, a written reflective work journal, a 4000 word report and a short presentation.

How is the Programme Structured?

Please specify the full time and part time programme diets (if appropriate).

The programme is full-time over five years. In the first year all modules are compulsory (or core). In the second year there are five compulsory modules and students must choose one of Financial Institutions and Actuarial Mathematics I, and two of Introduction to Algebra, Complex Variables, and Actuarial Mathematics II. In the fourth year there are six compulsory modules and students must choose one of Financial Management, Convergence and Continuity, Statistical Modelling II, and Time Series,

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and one of Differential and Integral Analysis, Metric Spaces and Topology, Design of Experiments, and Statistical Theory. In the final year there are seven compulsory modules including a 30-credit project.

The placement year is usually taken after the second year of study. However, it is also possible to complete the placement after the third or fourth year of study.

All students must complete a professional placement and pass the work experience module MTH5200; students not meeting this requirement, but meeting all other progression requirements, will transfer to the GN1H MSci Financial Mathematics programme.

For full details, please see <http://qmplus.qmul.ac.uk/mod/book/view.php?id=489759>.

QMUL Model

Students are required to undertake the equivalent of one module (15 credits in 2017/18) per year of study which has been identified as meeting the requirements of the QMUL Model. Each of these modules has been designed to combine the best of QMUL's academic excellence with your ability to identify and develop your skills, networks and experience. This will help to ensure you become a graduate who can undertake further study or secure graduate employment in areas that interest you, and will support your ability to position yourself to find the right job or opportunity for you. The relevant module for your first year of study in 2017/18 is indicated below.

Where more than one module is specified, this is because pertinent elements from these modules have been identified as being appropriate to the QMUL Model and when studied together, deliver the equivalent content of one 15-credit QMUL Model module.

The QMUL Model modules for future years and associated Learning Outcomes will be identified as your studies continue.

Should Professional, Statutory and Regulatory Body requirements apply to your programme of study, these will be taken into account in the specification of QMUL Model requirements.

Academic Year of Study FT - Year 1

Module Title	Module Code	Credits	Level	Module Selection Status	Academic Year of Study	Semester	QMUL Model
Essential Mathematical Skills	MTH3100	0	3	Core	1	Semesters 1 & 2	No
Calculus I	MTH4100	15	4	Compulsory	1	Semester 1	No
Computing and Data Analysis with Excel	MTH4114	15	4	Compulsory	1	Semester 1	Yes
Numbers, Sets and Functions	MTH4113	15	4	Compulsory	1	Semester 1	Yes
Introduction to Probability	MTH4107	15	4	Compulsory	1	Semester 1	No

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Module Title	Module Code	Credits	Level	Module Selection Status	Academic Year of Study	Semester	QMUL Model
Calculus II	MTH4101	15	4	Compulsory	1	Semester 2	<input type="checkbox"/> No
Geometry I	MTH4103	15	4	Compulsory	1	Semester 2	<input type="checkbox"/> No
Introduction to Statistics	MTH4106	15	4	Compulsory	1	Semester 2	<input type="checkbox"/> No
Economics for Business	BUS017	15	4	Compulsory	1	Semester 2	<input type="checkbox"/> No

Academic Year of Study FT - Year 2

Module Title	Module Code	Credits	Level	Module Selection Status	Academic Year of Study	Semester	QMUL Model
Applied Linear Algebra	MTH5212	15	5	Compulsory	2	Semester 1	<input type="checkbox"/> No
Probability Models	MTH5121	15	5	Compulsory	2	Semester 1	<input type="checkbox"/> No
Statistical Methods	MTH5122	15	5	Compulsory	2	Semester 1	<input type="checkbox"/> No
Actuarial Mathematics I	MTH5124	15	5	Elective	2	Semester 1	<input type="checkbox"/> No
Financial Institutions	BUS201	15	5	Elective	2	Semester 1	<input type="checkbox"/> No
Statistical Modelling I	MTH5120	15	5	Compulsory	2	Semester 2	<input type="checkbox"/> No
Differential Equations	MTH5123	15	5	Compulsory	2	Semester 2	<input type="checkbox"/> No
Introduction to Algebra	MTH4104	15	4	Elective	2	Semester 2	<input type="checkbox"/> No
Complex Variables	MTH5103	15	5	Elective	2	Semester 2	<input type="checkbox"/> No
Actuarial Mathematics II	MTH5125	15	5	Elective	2	Semester 2	<input type="checkbox"/> No

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Academic Year of Study FT - Year 4

Module Title	Module Code	Credits	Level	Module Selection Status	Academic Year of Study	Semester	QMUL Model
Numerical Computing with C and C++	MTH6150	15	6	Compulsory	4	Semester 1	<input type="checkbox"/> No
Partial Differential Equations	MTH6151	15	6	Compulsory	4	Semester 1	<input type="checkbox"/> No
Financial Mathematics I	MTH6154	15	6	Compulsory	4	Semester 1	<input type="checkbox"/> No
Random Processes	MTH6141	15	6	Compulsory	4	Semester 2	<input type="checkbox"/> No
Financial Mathematics II	MTH6155	15	6	Compulsory	4	Semester 2	<input type="checkbox"/> No
Financial Mathematics III	MTH6156	15	6	Compulsory	4	Semester 2	<input type="checkbox"/> No
Convergence and Continuity	MTH5104	15	5	Elective	4	Semester 1	<input type="checkbox"/> No
Statistical Modelling II	MTH6134	15	6	Elective	4	Semester 1	<input type="checkbox"/> No
Time Series	MTH6139	15	6	Elective	4	Semester 1	<input type="checkbox"/> No
Financial Management	BUS306	15	6	Elective	4	Semester 1	<input type="checkbox"/> No
Differential and Integral Analysis	MTH5105	15	5	Elective	4	Semester 2	<input type="checkbox"/> No
Metric Spaces and Topology	MTH6127	15	6	Elective	4	Semester 2	<input type="checkbox"/> No
Design of Experiments	MTH6116	15	6	Elective	4	Semester 2	<input type="checkbox"/> No
Statistical Theory	MTH6136	15	6	Elective	4	Semester 2	<input type="checkbox"/> No

Academic Year of Study FT - Year 5

Module Title	Module Code	Credits	Level	Module Selection Status	Academic Year of Study	Semester	QMUL Model
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Module Title	Module Code	Credits	Level	Module Selection Status	Academic Year of Study	Semester	QMUL Model
MSci Financial Mathematics Project	MTH781U	30	7	Compulsory	5	Semesters 1 & 2	No
Topics in Probability and Stochastic Processes	MTH734U	15	7	Compulsory	5	Semester 1	No
Computational Methods in Finance	MTH770U	15	7	Compulsory	5	Semester 1	No
Financial Derivatives Pricing and Risk Management	MTH779U	15	7	Compulsory	5	Semester 1	No
Stochastic Calculus and Black-Scholes Theory	MTH772U	15	7	Compulsory	5	Semester 2	No
Advanced Computing in Finance	MTH773U	15	7	Compulsory	5	Semester 2	No
Advanced Portfolio Theory and Risk Management	MTH774U	15	7	Compulsory	5	Semester 2	No

Academic Year of Study FT - Year 3

Module Title	Module Code	Credits	Level	Module Selection Status	Academic Year of Study	Semester	QMUL Model
Mathematical and Actuarial Work Experience	MTH5200	120	5	Core	3	Semesters 1-3	No

What Are the Entry Requirements?

Our normal entry requirement is three GCE A-levels at grade A including Mathematics, or equivalent. Applicants also need at least grade C or 4 in GCSE English Language, or equivalent.

How Do We Listen and Act on Your Feedback?

The Student-Staff Liaison Committee (SSLC) provides a formal means of communication and discussion between the School and its students. The committee consists of student representatives from each year in the School together with appropriate representation from staff within the School. It is designed to respond to the needs of students, as well as act as a forum for discussing programme and module developments. The Student-Staff Liaison Committee meets regularly throughout the year.

The School operates a Teaching and Learning Committee, which advises the School Director of Taught Programmes on all matters relating to the delivery of taught programmes at School level including monitoring the application of relevant QMUL

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policies and reviewing all proposals for module and programme approval and amendment before submission to Taught Programmes Board. Student views are incorporated in this Committee's work in a number of ways, such as through the SSLC and consideration of student surveys.

The School operates an Annual Programme Review of all its taught provision. The process is organised at a School-level basis with the Director of Taught Programmes responsible for updating the School's Taught Programmes Action Plan. Students' views are considered in this process through analysis of student surveys and module evaluations.

Academic Support

Each student is allocated a personal academic adviser, who acts as a first point of contact for general academic and pastoral support. Personal tuition is provided primarily through tutorial classes and visits to module organisers during their office hours, which are advertised on the web. Programme induction for new students begins during the enrolment period and extends into the first semester; it includes a series of presentations organised by the Student Support Officer. Each programme is assigned a Programme Director and all teaching is overseen by the Teaching and Learning Committee, which includes the Programme Directors and is chaired by the Director of Taught Programmes. Programmes are monitored continuously and reviewed every few years by the Teaching and Learning Committee.

Programme-specific Rules and Facts

All first-year Mathematical Sciences students must pass Essential Mathematical Skills in order to progress to the second year of a Mathematical Sciences degree programme.

Students must achieve an average overall grade of 50% or higher in order to commence a professional placement.

All students must complete a professional placement and pass the work experience module MTH5200; students not meeting this requirement, but meeting all other progression requirements, will transfer to the GN1H MSci Financial Mathematics programme.

Specific Support for Disabled Students

Queen Mary has a central Disability and Dyslexia Service (DDS) that offers support for all students with disabilities, specific learning difficulties and mental health issues. The DDS supports all Queen Mary students: full-time, part-time, undergraduate, postgraduate, UK and international at all campuses and all sites.

Students can access advice, guidance and support in the following areas:

- finding out if you have a specific learning difficulty like dyslexia;
- applying for funding through the Disabled Students' Allowance (DSA);
- arranging DSA assessments of need;
- special arrangements in examinations;
- accessing loaned equipment (e.g. digital recorders);
- specialist one-to-one "study skills" tuition;
- ensuring access to course materials in alternative formats (e.g. Braille);
- providing educational support workers (e.g. note-takers, readers, library assistants);
- mentoring support for students with mental health issues and conditions on the autistic spectrum.

Links With Employers, Placement Opportunities and Transferable Skills

The MSci programme has been specifically designed with the aim of maximising the employability of our graduates. As well as acquiring general problem-solving skills, the practical skills in computer programming will find wide applicability, since these are always in very high demand from employers.

Furthermore, students on the MSci in Financial Mathematics can attend our practitioner seminars, where experts from the banking and finance sectors visit us, to give talks about the work they do. Queen Mary's unique location (almost mid-way

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between the City of London and Canary Wharf) means that we can attract a wide range of speakers. Students are actively encouraged to network with our guests, potentially leading to internship and employment opportunities.

In the final year, we also offer our Professional Skills Workshops, where students can acquire a range of additional skills (for example, programming in Excel, preparing presentations, writing reports, etc.) that will enhance their employability. Further advice and support will be provided to students applying for placements.

Programme Specification Approval

Person completing Programme Specification

Dr Francis Wright, Director of Undergraduate Studies

Person responsible for management of programme

Dr Neofytos Rodosthenous

**Date Programme Specification produced/amended
by School Learning and Teaching Committee**

18 Jan 2017

**Date Programme Specification approved by
Taught Programmes Board**