Programme Title: MSci Financial Mathematics ;MSci Financial Mathematics with Year Abroad;MSci Financial Mathematics with

Programme Specification (UG)

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 MSci Financial Mathematics with Year Abroad MSci Financial Mathematics with Professional Placement
Name of interim award(s):	CertHE, DipHE
Duration of study / period of registration:	4/5 years
QMUL programme code / UCAS code(s):	UMIF-QMMATH1-USFIM/GN1H;UMIF-QMMATG1-USFIA/GNHY;UMIF-QM
QAA Benchmark Group:	Mathematics, statistics and operational research
FHEQ Level of Award :	Level 6
Programme accredited by:	N/A
Date Programme Specification approved:	
Responsible School / Institute:	School of Mathematical Sciences

Schools / Institutes which will also be involved in teaching part of the programme:
School of Business & Management

Institution(s) other than QMUL that will provide some teaching for the programme:

Programme outline

The MSci in Financial Mathematics is a 4-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. Modules taken in the 4th year are all at Master's level, and most are shared with our MSc degrees in Mathematics and Mathematical Finance.

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 third 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?

Students who successfully complete this programme will be able to:

Programme Title: MSci Financial Mathematics ;MSci Financial Mathematics with Year Abroad;MSci Financial Mathematics with

QMUL Model

The QMUL Model is an innovative teaching and learning initiative that will broaden opportunities for Queen Mary undergraduates within and beyond higher education, supporting them to plan and manage their ongoing professional development. The Model is firmly grounded in the core QMUL values of respect for, and engagement with, the local area and communities, with a distinctive focus on enabling students to make a positive societal impact through leadership in their chosen field. The Model is organised around the key themes of:

- networking
- multi- and inter-disciplinarity
- international perspectives
- enterprising perspectives.

Students are required to study QMUL Model modules to the value of at least 10 credits at each year of undergraduate study. Model modules may be 5, 10 or 15 credits. Model modules are indicated within this programme specification.

In your first year of study, the Model module will be core or compulsory and will be situated within your home School or Institute. In subsequent years, students will be strongly encouraged to study at least one Model module beyond their home discipline(s), which could, for example, be in another School / Institute or area of QMUL or undertaken as a module outside of QMUL.

If Model module information is not provided on this programme specification for all subsequent years of study, this will be identified as your studies continue.

Where a Model module elective can be selected from an approved group of Model modules, no guarantee can be provided that your first choice of Model module will be available.

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;

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;

Queen Mary University of London

Programme Title: MSci Financial Mathematics ;MSci Financial Mathematics with Year Abroad;MSci Financial Mathematics with

Attributes:	
C 1	Integrate knowledge from many different fields;
C 2	Choose the appropriate mathematical tools for solving particular problems;
C 3	Develop independent research skills by undertaking a substantial project dissertation;

QMUL Model Learning Outcomes - Level 4:	
D 1	**(Networking) Identify and discuss their own career aspirations or relevant skills and knowledge and how they i**
D 2	**(Networking) Identify and discuss what their own role in their programme and/or subject discipline might mea**
D 3	

QMUL Model Learning Outcomes - Level 5:	
E 1	(Networking) Evaluate and demonstrate their own attitudes, values and skills in the workplace and/or in the wider wo
E 2	(Enterprising Perspectives) Recognise and prioritise areas for developing their own enterprising perspectives
E 3	

QMUL Model Learning Outcomes - Level 6:	
F 1	
F 2	
F 3	

Programme Title: MSci Financial Mathematics ;MSci Financial Mathematics with Year Abroad;MSci Financial Mathematics with

QMUL Model Learning Outcomes - Level 7:	
G1	
G2	
G3	

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.

How is the programme structured?

Please specify the full time and part time programme diets (if applicable). Please also outline the QMUL Model arrangements for each year of study. The description should be sufficiently detailed to fully define the structure of the diet.

All first-year Mathematical Sciences students must take and pass MTH3100 Essential Mathematical Skills in order to progress to the second year of a Mathematical Sciences degree programme.

Year 1
MTH3100 [3] Essential Mathematical Skills (0 Credit Core module)

8 compulsory level 4 modules
MTH4100 [4] Calculus I
MTH4114 [4] Computing and Data Analysis with Excel
MTH4113 [4] Numbers, Sets and Functions
MTH4107 [4] Introduction to Probability
MTH4101 [4] Calculus II

MTH4115 [4] Vectors and Matrices
MTH4116 [4] Probability and Statistics I
BUS017 [4] Economics for Business

Year 2
Semester A
Three compulsory modules
MTH5212 [5] Applied Linear Algebra
MTH5129 [5] Probability and Statistics II
MTH5123 [5] Differential Equations

Choose one from:

MTH5124 [5] Actuarial Mathematics I
BUS201 [5] Financial Institutions
MTH5002 [5] Professional Skills and Data Analysis with SAS

Semester B
One compulsory module
MTH5120 [5] Statistical Modelling I

Choose three from

MTH4104 [4] Introduction to Algebra
MTH5114 [5] Linear Programming and Games
MTH5103 [5] Complex Variables
MTH5125 [5] Actuarial Mathematics II (requires MTH5124 Actuarial Mathematics I)
MTH5126 [5] Statistics for Insurance
MTH5001 [5] Introduction to Computer Programming

Year 3
Six compulsory modules
MTH6150 [6] Numerical Computing with C and C++
MTH6154 [6] Financial Mathematics I
MTH6141 [6] Random Processes
MTH6155 [6] Financial Mathematics II
MTH6113 [6] Mathematical Tools for Asset Management
MTH6151 [6] Partial Differential Equations
Choose one of:
MTH5104 [5] Convergence and Continuity
MTH6134 [6] Statistical Modelling II
BUS306 [6] Financial Management
MTH6102[6] Bayesian Statistical Methods

Choose one of:
MTH5105 [5] Differential and Integral Analysis
MTH6127 [6] Metric Spaces and Topology
MTH6101 [6] Introduction to Machine Learning
MTH6139 [6] Time Series

Year 4
All modules compulsory

MTH798U [7] MSci Financial Mathematics Project (30 credits, double module over both semesters)
MTH734U [7] Topics in Probability and Stochastic Processes
MTH790P/U [7] Programming in C++ for Finance
MTH771U [7] Foundations of Mathematical Modelling in Finance.

Programme Title: MSci Financial Mathematics ;MSci Financial Mathematics with Year Abroad;MSci Financial Mathematics with

MTH772U [7] Stochastic Calculus and Black-Scholes Theory
MTH773U [7] Advanced Computing in Finance
MTH774U [7] Advanced Portfolio Theory and Risk Management

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
Calculus II	MTH4101	15	4	Compulsory	1	Semester 2	No
Vectors and Matrices	MTH4115	15	4	Compulsory	1	Semester 2	No
Economics for Business	BUS017	15	4	Compulsory	1	Semester 2	No
Probability and Statistics I	MTH4116	15	4	Compulsory	1	Semester 2	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	No
Probability and Statistics II	MTH5129	15	5	Compulsory	2	Semester 1	No

Programme Title: MSci Financial Mathematics ;MSci Financial Mathematics with Year Abroad;MSci Financial Mathematics with

Module Title	Module Code	Credits	Level	Module Selection Status	Academic Year of Study	Semester	QMUL Model
Complex Variables	MTH5103	15	5	Elective	2	Semester 2	No
Statistical Modelling I	MTH5120	15	5	Compulsory	2	Semester 2	No
Differential Equations	MTH5123	15	5	Compulsory	2	Semester 1	No
Professional Skills and Data Analysis with SAS	MTH5002	15	5	Elective	2	Semester 1	Yes
Linear Programming and Games	MTH5114	15	5	Elective	2	Semester 2	No
Actuarial Mathematics I	MTH5124	15	5	Elective	2	Semester 1	No
Financial Institutions	BUS201	15	5	Elective	2	Semester 1	No
Introduction to Algebra	MTH4104	15	4	Elective	2	Semester 2	No
Actuarial Mathematics II	MTH5125	15	5	Elective	2	Semester 2	No
Introduction to Computer Programming	MTH5001	15	5	Elective	2	Semester 2	Yes
Statistics for Insurance	MTH5126	15	5	Elective	2	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
Financial Mathematics I	MTH6154	15	6	Compulsory	3	Semester 1	Yes
Metric Spaces and Topology	MTH6127	15	6	Elective	3	Semester 2	No
Random Processes	MTH6141	15	6	Compulsory	3	Semester 1	No
Financial Mathematics II	MTH6155	15	6	Compulsory	3	Semester 2	No

Programme Title: MSci Financial Mathematics ;MSci Financial Mathematics with Year Abroad;MSci Financial Mathematics with

Module Title	Module Code	Credits	Level	Module Selection Status	Academic Year of Study	Semester	QMUL Model
Mathematical Tools for Asset Management	MTH6113	15	6	Compulsory	3	Semester 2	No
Partial Differential Equations	MTH6151	15	6	Compulsory	3	Semester 1	No
Convergence and Continuity	MTH5104	15	5	Elective	3	Semester 1	No
Statistical Modelling II	MTH6134	15	6	Elective	3	Semester 1	No
Time Series	MTH6139	15	6	Elective	3	Semester 2	No
Financial Management	BUS306	15	6	Elective	3	Semester 1	No
Differential and Integral Analysis	MTH5105	15	5	Elective	3	Semester 2	No
Introduction to Machine Learning	MTH6101	15	5	Elective	3	Semester 2	No
Numerical Computing with C and C++	MTH6150	15	6	Compulsory	3	Semester 1	No
Bayesian Statistical Methods	MTH6102	15	6	Elective	3	Semester 1	No

Academic Year of Study FT - Year 4

Module Title	Module Code	Credits	Level	Module Selection Status	Academic Year of Study	Semester	QMUL Model
MSci Financial Mathematics Project	MTH798U	30	7	Compulsory	4	Semesters 1 & 2	No
Topics in Probability and Stochastic Processes	MTH734U	15	7	Compulsory	4	Semester 1	No
Programming in C++ for Finance	MTH790P/U	15	7	Compulsory	4	Semester 1	No
Foundations of Mathematical Modelling in Finance	MTH771U	15	7	Compulsory	4	Semester 1	No
Stochastic Calculus and Black-Scholes Theory	MTH772U	15	7	Compulsory	4	Semester 2	No

Programme Title: MSci Financial Mathematics ;MSci Financial Mathematics with Year Abroad;MSci Financial Mathematics with

Module Title	Module Code	Credits	Level	Module Selection Status	Academic Year of Study	Semester	QMUL Model
Advanced Computing in Finance	MTH773U	15	7	Compulsory	4	Semester 2	No
Advanced Portfolio Theory and Risk Management	MTH774U	15	7	Compulsory	4	Semester 2	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 will the quality of the programme be managed and enhanced?

The programme is over seen by a Programme Director with overall oversight of the programme.

The quality of individual modules is monitored by DOTP and DUGS, and includes evaluation of student feedback through questionnaires, the Student Staff Liaison Committee, module registrations, exam performance, as well as direct observations of the lectures.

The quality and structure of the programme as a whole is the responsibility of the DoTP with support from DUGS, the Programme Director and the School's Teaching and Learning Committee. This includes revising the syllabuses of modules, and refining the module offering.

How do we listen to 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 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.

What academic support is available?

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. At the end of year two, students have the opportunity to take a placement year in industry - G100 Mathematics with Professional Placement. Students also have the option to take advantage of studying abroad - G100 Mathematics with Year Abroad.

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

Recent graduates have gone into a wide variety of jobs. Some went into positions in the financial sector ranging from actuarial and accountancy trainees with banks such as Lloyds TSB to a financial analyst with AIG. Teacher training was an option that was taken up by a number of our graduates, as was further study: around one third of our graduates go on to complete a Masters or PhD degree. High-level numeracy is one of the most sought-after skills in the workplace and many opportunities are open to a mathematical sciences graduate. During this degree programme students learn how to analyse and solve problems, apply mathematical modelling, communicate their ideas and theories effectively, and work independently and manage their own time. Students learn to apply mathematical techniques to situations across the sciences and other areas such as finance. These skills are highly desirable to employers ranging from business and finance to the chemicals and materials industries.

Programme Specification Approval

Person completing Programme Specification:	Dr Mark Walters, DoTP
Person responsible for management of programme:	Dr Neofytos Rodosthenous
Date Programme Specification produced / amended by School / Institute Learning and Teaching Committee:	11 Jan 2019

Queen Mary University of London

Programme Title: MSci Financial Mathematics ;MSci Financial Mathematics with Year Abroad;MSci Financial Mathematics with

Date Programme Specification approved by Taught Programmes Board:	

Queen Mary University of London