Programme Title: MSc Mathematical Finance

Programme Specification

Awarding Body/Institution	Queen Mary University of London
Teaching Institution	Queen Mary University of London
Name of Final Award and Programme Title	MSc Mathematical Finance
Name of Interim Award(s)	PG Cert and PG Dip
Duration of Study / Period of Registration	1 year FT
QM Programme Code / UCAS Code(s)	G1S2
QAA Benchmark Group	N/A
FHEQ Level of Award	Level 7
Programme Accredited by	N/A
Date Programme Specification Approved	TBC
Responsible School / Institute	School of Mathematical Sciences

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

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

Programme Outline

The study programme consists of four compulsory taught modules, four elective taught modules, and a summer project.

Two of the compulsory modules are run by the School of Mathematical Sciences (SMS), and these cover the important mathematical and computational techniques that will form the foundations of your subsequent studies. The other two compulsory modules are run by the School of Economics and Finance (SEF), and these introduce many of the key concepts from finance. You will be able to choose from a wide range of elective modules offered by both Schools.

Our modules are assessed by a mixture of in-term assessments and final examinations (held between late April and early June). The project is evaluated by a written dissertation which you will submit in September.

Successful completion of the MSc programme will result in the award of the MSc in Mathematical Finance (possibly with Merit or with Distinction).

Aims of the Programme

The MSc in Mathematical Finance programme will prepare students for a wide range of careers, especially in the banking and

Programme Title: MSc Mathematical Finance

finance sector, as well as marketing, public services, consultancy, industry and commerce. The analytic and computing skills acquired throughout the programme are much valued in the financial sector and a number of recent graduates from the School of Mathematical Sciences have gone on to work for companies such as the Royal Bank of Scotland, HSBC, Procter and Gamble, Barclays Capital, JP MorganChase and EDF Energy.

First destinations of School of Economics and Finance graduates include some of the most prestigious universities in UK, continental Europe and Asia; several independent economic research centres and private institutions; many governmental research departments and regulatory bodies, such as the antitrust authorities and the financial regulatory agencies; some international institutions such as the European Central Bank, the Bank of England, the European Commission, the International Monetary Fund and the World Bank.

What Will You Be Expected to Achieve?

Our programme is particularly designed to enhance your practical skills in mathematical finance. We also offer unique professional skills workshops and a seminar series with speakers from finance/banking sector. You can also join the School of Economics and Finance's MSc Investment Club to gain "hands on" experience in trading and portfolio analysis alongside your studies.

Academic Content:	
A 1	Understand basic techniques and tools of financial modeling.
A 2	Understand asset pricing theory and related subjects.
A 3	Understand risk management and related subjects.
A 4	Achieve an understanding of both mathematical techniques and financial market structure.
A 5	Understand applied probability and stochastic processes in the context of finance.
A 6	Apply Black-Scholes theory to option pricing.

Disciplinary Skills - able to:	
B 1	Perform analytic calculations estimating risk.
B 2	Choose an optimum portfolio.
B 3	Write simple code in C++.

Attributes:	
C 1	Demonstrate report-writing, initiative, planning and time management skills through a substantive MSc research project.
C 2	Work in a team during the classes and in preparation for the lectures.

Queen Mary University of London

Programme Title: MSc Mathematical Finance

C 3	

How Will You Learn?

The programme is delivered via a mixture of lectures, tutorials and programming assignments. Successful completion requires intensive coursework. The majority of tutorials taught within SMS require students to engage with in-class exercises. Modules with computational content are delivered in PC labs and require students to engage in practical tutorial sessions. Students are required to attend professional skills workshops as well as lectures and seminars delivered by industry professionals relating to their studies, which are organised within SMS and SEF. Students have access to IT facilities, including Bloomberg terminals and specialist software packages in SMS and SEF.

How Will You Be Assessed?

The programme assessment is by written examinations and a written dissertation (in line with the regulations for projects/ dissertations at Masters level). Where computational and programming skills are taught, modules have in-term assessed project work and coursework.

How is the Programme Structured?

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

(Note: The following programme structure will take effect from academic year 2018/19 onwards.)

The programme consists of 60 credits of compulsory modules, 60 credits of elective modules, and a 60 credit project / dissertation. Modules with codes beginning MTH are offered by the School of Mathematical Sciences (SMS), and modules with codes beginning ECOM are offered by the School of Economics and Finance (SEF). The project is managed by SMS, although some students will receive supervision from SEF.

For full-time students, the programme runs over one year, and the module diet is as follows:

Semester A:
Students will take four compulsory modules:
MTH790P: Programming in C++ for Finance
MTH771P: Foundations of Mathematical Modelling in Finance
ECOM014: Time Series Analysis
ECOM065: Investments

Semester B:
Students freely choose any four modules from the following set of elective modules:
MTH772P: Stochastic Calculus and Black-Scholes Theory
MTH773P: Advanced Computing in Finance
MTH774P: Portfolio Theory and Risk Management
MTH789P: Trading and Risk Systems Development

Programme Title: MSc Mathematical Finance

ECOM025: Financial Econometrics
ECOM026: Financial Derivatives
ECOM059: Applied Risk Management for Banking
ECOM074: Bond Market Strategies
ECOM076: Alternative Investments
ECOM077: Valuation and Private Equity
ECOM091: Credit Ratings
ECOM123: Systematic Trading Strategies
ECOM135: Machine Learning Applications for Finance

Semesters A, B, C:
There is a compulsory project to be undertaken primarily during the summer:
MTH775P: MSc Mathematical Finance Dissertation

Students are also offered a variety of unassessed lectures in Week 0 (pre-sessional lectures). There is also a range of extra-curricular activities, including professional skills workshops and a practitioner seminar series (talks by professionals from the banking industry, etc.).

Academic Year of Study FT - Year 1

Module Title	Module Code	Credits	Level	Module Selection Status	Academic Year of Study	Semester
Pre-sessional Economics		0	6	Study only	1	Semester 1
MSc Dissertation (10 000 words)	MTH775P	60	7	Core	1	Semesters 1-3
Programming in C++ for Finance	MTH790P	15	7	Compulsory	1	Semester 1
Foundations of Mathematical Modelling in Finance	MTH771P	15	7	Compulsory	1	Semester 1
Investments	ECOM065	15	7	Compulsory	1	Semester 1
Time Series Analysis	ECOM014	15	7	Compulsory	1	Semester 1
Financial Derivatives	ECOM026	15	7	Elective	1	Semester 2
Advanced Computing in Finance	MTH773P	15	7	Elective	1	Semester 2
Portfolio Theory and Risk Management	MTH774P	15	7	Elective	1	Semester 2
Alternative Investments	ECOM076	15	7	Elective	1	Semester 2

Programme Title: MSc Mathematical Finance

Module Title	Module Code	Credits	Level	Module Selection Status	Academic Year of Study	Semester
Financial Econometrics	ECOM025	15	7	Elective	1	Semester 2
Trading and Risk Systems Development	MTH789P	15	7	Elective	1	Semester 2
Stochastic Calculus and Black-Scholes Theory	MTH772P	15	7	Elective	1	Semester 2
Valuation and Private Equity	ECOM077	15	7	Elective	1	Semester 2
Applied Risk Management for Banking	ECOM059	15	7	Elective	1	Semester 2
Credit Ratings	ECOM091	15	7	Elective	1	Semester 2
Bond Market Strategies	ECOM074	15	7	Elective	1	Semester 2
Machine Learning Applications for Finance	ECOM135	15	7	Elective	1	Semester 2
Systematic Trading Strategies	ECOM123	15	7	Elective	1	Semester 2

What Are the Entry Requirements?

Entrants must usually have the equivalent of a British first or good second class honours degree in a subject with a substantial mathematical component (mathematics, statistics, physics, engineering, economics, or computer science). The Admissions Tutor assesses applicant suitability for the programme on a case-by-case basis.

Entrants for whom English is a second language must meet the minimum IELTS requirement of 6.5 (or equivalent).

How Do We Listen and Act on Your Feedback?

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

Each school/institute operates a Learning and Teaching Committee, or equivalent, which advises the School/Institute Director of Taught Programmes on all matters relating to the delivery of taught programmes at school level including monitoring the application of relevant QM policies and reviewing all proposals for module and programme approval and amendment before submission to Taught Programmes Board. Student views are incorporated in the committee's work in a number of ways, such as through student membership, or consideration of student surveys.

All schools/institutes operate an Annual Programme Review of their taught undergraduate and postgraduate provision. APR is a continuous process of reflection and action planning which is owned by those responsible for programme delivery; the main document of reference for this process is the Taught Programmes Action Plan (TPAP) which is the summary of the

school/institute's work throughout the year to monitor academic standards and to improve the student experience. Students' views are considered in this process through analysis of the NSS and module evaluations.

Academic Support

Every student is assigned an academic adviser to offer academic guidance throughout their studies, for example guidance on selection of modules at the start of the year. The Student Support teams in SMS and SEF ensure that students feel able to consult staff in either School to resolve any difficulties that may arise.
The Programme Director, or a nominated delegate, works with SMS and SEF academic staff to organise project supervision for each student.
The Postgraduate Programme Administrator and Student Support Officer in SMS liaise with the Programme Director and with SEF staff to run a full induction programme for new students.

Programme-specific Rules and Facts

N/A

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 MSc in Mathematical Finance programme prepares students for a wide range of careers, especially in the banking and finance sector, as well as marketing, public services, consultancy, industry and commerce. The analytic and computing skills acquired throughout the programme are much valued in the financial sector and a number of recent graduates from the School of Mathematical Sciences have gone on to work for companies such as the Royal Bank of Scotland, HSBC, Procter and Gamble, Barclays Capital, JP MorganChase and EDF Energy. First destinations of School of Economics and Finance graduates include some of the most prestigious universities in UK, continental Europe and Asia; several independent economic research centres and private institutions; many governmental research departments and regulatory bodies, such as the antitrust authorities and the financial regulatory agencies; some international institutions such as the European Central Bank, the Bank of England, the European Commission, the International Monetary Fund and the World Bank.

Programme Title: MSc Mathematical Finance

Programme Specification Approval

Person completing Programme Specification	Michael Phillips
Person responsible for management of programme	Michael Phillips
Date Programme Specification produced/amended by School Learning and Teaching Committee	TBC
Date Programme Specification approved by Taught Programmes Board	TBC

Queen Mary University of London