Programme Title: BSc Mathematics with a Professional Placement

Queen Mary
University of London

Programme Specification

Awarding Body/Institution	Queen Mary University of London
Teaching Institution	Queen Mary University of London
Name of Final Award and Programme Title	BSc Mathematics with Professional Placement
Name of Interim Award(s)	CertHE, DipHE
Duration of Study / Period of Registration	4 years
QM Programme Code / UCAS Code(s)	G101
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 which will also be involved in teaching part of the programme

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

Programme Outline

This programme provides a broad training in the discipline of mathematics, assuring a good foundation in a range of both abstract and applicable areas and offering opportunities for specialisation in the later stages. Graduates from the programme find employment in many different areas, for example in the financial sector and in teaching, or they continue their studies at postgraduate level, in mathematics or an application. 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.

Aims of the Programme

This programme aims to teach a wide range of topics covering pure and applied mathematics, probability and statistics. The exceptionally broad range of second and final-year options aims to allow graduates to benefit from our research strengths. The first year covers essential fundamentals but the final-year aims to allow students to follow their own preferences. Whether students are interested in specialising in statistics, finance, pure or applied mathematics, the wide range of modules available provides the opportunity.

Queen Mary
University of London

Programme Title: BSc Mathematics with a Professional Placement

What Will You Be Expected to Achieve?

Students who successfully complete this programme will be able to:

Academic Content:	
A1	reason clearly, critically and with rigour within a mathematical context;
A2	construct appropriate written mathematical arguments;
A3	analyse a problem within a mathematical context and select appropriate mathematical tools to solve it;
A4	application of mathematical and statistical knowledge in a business environment.

Disciplinary Skills - able to:	
B1	be fluent and accurate in basic numerical skills;
B2	comprehend fundamental concepts and techniques of calculus, algebra, probability theory and at least one additional main mathematical subject;
B3	take notes, write up notes, plan revision, and learn independently;
B4	use e-mail for cooperation and the internet as a source of information, and have a sense of right and wrong ways of using these facilities;
B5	manage time and work cooperatively with fellow students;
B6	communicate clearly in writing and through presentations in a style and manner appropriate to the subject and audience.

Attributes:	
C1	acquire complex knowledge and apply it rigorously;
C2	connect information and ideas within their field of study;
C3	use writing for learning, reflection, and communication;
C4	adapt their understanding to new and unfamiliar settings;

Queen Mary
University of London

C 5	acquire new learning skills in a range of ways, both individually and collaboratively;
C 6	use quantitative data confidently and competently.
C 7	acquire transferable key skills to help with career goals and continuing education;
C 8	develop effective spoken English and presentation skills;
C 9	use information for evidence-based decision-making and creative thinking;
C 10	work individually and in groups as a participant who contributes effectively to the group's task;
C 11	demonstrate initiative and resilience in meeting challenges.

QMUL Model Learning Outcomes - Level 4:	
D 1	Identify and discuss their own career aspirations or enterprise skills and knowledge and how they impact on others
D 2	Identify and discuss what their own role in their programme and/or subject discipline might mean to them for future (
D 3	

How Will You Learn?

Teaching in most modules is primarily by formal lectures but may include guided reading. For all except some higher-level modules, teaching is supported by tutorial classes and/or computer laboratories. Teaching of reading and project modules is primarily by guided reading and weekly seminars or supervisions.

Learning in most modules is by attending lectures, reading lecture notes and recommended text books, attempting exercises and asking questions in tutorial classes and/or computer laboratories and staff office hours.

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 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.

Queen Mary
University of London

Programme Title: BSc Mathematics with a Professional Placement

How is the Programme Structured?
Please specify the full time and part time programme diets (if appropriate).

In the first year, students take 8 compulsory level-4 modules. In the second year, they take 1 compulsory level-5 module, choose 5 further level-5 modules from two lists, and have free choice of another 30 credits at level 4–6. In the final year, they choose 4 level-6 modules from a list and have free choice of 30 credits from MTH modules at level 6 and another 30 credits at level 5 or 6.

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

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. 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 G100 BSc 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	MTH4200	15	4	Compulsory	1	Semester 1	No
Computing and Data Analysis with Excel	MTH4114	15	4	Compulsory	1	Semester 1	Yes

Programme Title: BSc Mathematics with a Professional Placement

Module Title	Module Code	Credits	Level	Module Selection Status	Academic Year of Study	Semester	QMUL Model
Numbers, Sets and Functions	MTH4213	15	4	Compulsory	1	Semester 1	Yes
Introduction to Probability	MTH4207	15	4	Compulsory	1	Semester 1	No
Calculus II	MTH4201	15	4	Compulsory	1	Semester 2	No
Geometry I	MTH4203	15	4	Compulsory	1	Semester 2	No
Introduction to Algebra	MTH4104	15	4	Compulsory	1	Semester 2	No
Introduction to Statistics	MTH4206	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
Linear Algebra I	MTH5112	15	5	Compulsory	2	Semester 1	No
Calculus III	MTH5102	15	5	Elective	2	Semester 1	No
Convergence & Continuity	MTH5104	15	5	Elective	2	Semester 1	No
Geometry II: Knots and Surfaces	MTH5109	15	5	Elective	2	Semester 1	No
Mathematical Writing	MTH5117	15	5	Elective	2	Semester 1	No
Probability Models	MTH5121	15	5	Elective	2	Semester 1	No
Statistical Methods	MTH5122	15	5	Elective	2	Semester 1	No
Actuarial Mathematics I	MTH5124	15	5	Elective	2	Semester 1	No
Algebraic Structures I	MTH5100	15	5	Elective	2	Semester 2	No

Queen Mary
University of London

Programme Title: BSc Mathematics with a Professional Placement

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
Differential & Integral Analysis	MTH5105	15	5	Elective	2	Semester 2	No
Introduction to Numerical Computing	MTH5110	15	5	Elective	2	Semester 2	No
Statistical Modelling I	MTH5120	15	5	Elective	2	Semester 2	No
Differential Equations	MTH5123	15	5	Elective	2	Semester 2	No
Actuarial Mathematics II	MTH5125	15	5	Elective	2	Semester 2	No

Academic Year of Study   FT - Year 4

Module Title	Module Code	Credits	Level	Module Selection Status	Academic Year of Study	Semester	QMUL Model
Algebraic Structures II	MTH6104	15	6	Elective	4	Semester 1	No
Chaos & Fractals	MTH6107	15	6	Elective	4	Semester 1	No
Combinatorics	MTH6109	15	6	Elective	4	Semester 1	No
Cryptography	MTH6115	15	6	Elective	4	Semester 1	No
Relativity	MTH6132	15	6	Elective	4	Semester 1	No
Third Year Project	MTH6138	15	6	Elective	4	Semesters 1 & 2	No
Linear Algebra II	MTH6140	15	6	Elective	4	Semester 1	No
Financial Mathematics I	MTH6154	15	6	Elective	4	Semester 1	No
Coding Theory	MTH6108	15	6	Elective	4	Semester 2	No

Programme Title: BSc Mathematics with a Professional Placement

Module Title	Module Code	Credits	Level	Module Selection Status	Academic Year of Study	Semester	QMUL Model
Mathematical Problem Solving	MTH6124	15	6	Elective	4	Semester 2	No
Metric Spaces and Topology	MTH6127	15	6	Elective	4	Semester 2	No
Number Theory	MTH6128	15	6	Elective	4	Semester 2	No
Random Processes	MTH6141	15	6	Elective	4	Semester 2	No
Complex Networks	MTH6142	15	6	Elective	4	Semester 2	No
Financial Mathematics II	MTH6155	15	6	Elective	4	Semester 2	No
Financial Mathematics III	MTH6156	15	6	Elective	4	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 grades AAB including grade A in 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

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 in order to graduate from this programme. Any student who does not start, or who does not successfully complete, the placement year will transfer to the G100 BSc Mathematics programme, subject to meeting all other progression requirements.

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.
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 Oscar Bandtlow
Date Programme Specification produced/amended by School Learning and Teaching Committee	18 Jan 2017
Date Programme Specification approved by Taught Programmes Board	

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