Queen Mary
University of London

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:	BSc Actuarial Science;BSc Actuarial Science with Year Abroad;BSc Actuarial Science with Professional Placement;
Name of interim award(s):	CertHE, DipHE
Duration of study / period of registration:	3/4 years
QMUL programme code / UCAS code(s):	UBSF-QMMATH1-UMMASACT / N323; UBSF-QMMATG1-UMMAAACA /
QAA Benchmark Group:	Mathematics, statistics and operational research
FHEQ Level of Award :	Level 6
Programme accredited by:	Institute and Faculty of Actuaries
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

Collaborative institution(s) / organisation(s) involved in delivering the programme:

Programme outline

Actuaries deal with uncertainties of future events, drawing on their mathematical skills, in particular in probability and statistics. The BSc in Mathematics with Actuarial Science is a 3-year taught programme which combines all the elements of a generalist undergraduate mathematics degree with a large number of specialist modules. It thus provides solid technical skills in mathematics and actuarial science, as well as economics and financial reporting, to prepare for a career as an actuary or a related career in the financial sector. Successful students will be able to obtain exemptions from up to eight of the Core Technical Examinations of the Institute and Faculty of Actuaries.

The programme is designed to deliver an integrated package of mathematical, computational and business knowledge which will prepare students for the job market. The programme provides useful skills including project and group work, as well as presentational skills, some of which are delivered via compulsory, non credit bearing, Actuarial Professional Development modules in the first and second years.

The School recognises the benefits of short placements and internships during vacations and will encourage and try to facilitate these at suitable companies in London, although it cannot guarantee these will be possible.

Queen Mary
University of London

Programme Title: BSc Actuarial Science; BSc Actuarial Science with Year Abroad; Sc Actuarial Science with Professional Placem

Aims of the programme

The programme is designed to attract high performing students in Mathematics who are interested in careers in the financial services sector, in particular insurance or pensions where qualified actuaries are sought after and attract high salaries. By introducing many of the skills which a qualified actuary needs at an early stage in their development it also allows students to decide whether they are perhaps more suited to a general financial, statistical or other career. The programme contains a range of both general and specialist modules.

What will you be expected to achieve?

Students who successfully complete this programme will be expected to achieve all of the learning outcomes listed outcomes shown below.

Please note that the following information is only applicable to students who commenced their Level 4 studies in 2017/18, or 2018/19

In each year of undergraduate study, students are required to study modules to the value of at least 10 credits, which align to one or more of the following themes:

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

These modules will be identified through the Module Directory, and / or by your School or Institute as your studies progress.

Academic Content:	
A 1	Core techniques in mathematics.
A 2	Statistical modelling relevant to actuarial and business applications.
A 3	Techniques of financial modelling.
A 4	Knowledge of economics and financial reporting.

Queen Mary
University of London

Disciplinary Skills - able to:	
B 1	Solve mathematical problems using a range of analytical tools.
B 2	Apply techniques from probability and statistics to problems in insurance and pensions.
B 3	Report results of analyses appropriately.
B 4	Understand the legal, social, ethical and professional issues of being an actuary.

Attributes:	
C 1	Integrate knowledge from many different fields.
C 2	Choose the appropriate mathematical tools for solving particular problems.
C 3	Have a broad knowledge of the work of an actuary.

How will you learn?

Throughout the three 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 some statistics and 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.

How will you be assessed?

The majority of our modules are assessed by written examination, although some also involve an element of assessed coursework, or practical work using computers.

How is the programme structured?

Please specify the structure of the programme diets for all variants of the programme (e.g. full-time, part-time - if applicable). The description should be sufficiently detailed to fully define the structure of the diet.

For degree awarding purposes (in order to deal with special cases like changes of programme) students will be allowed to choose up to 30 credits of off diet modules in any year (with School approval). The exact details of which exemptions from examinations of the Institute and Faculty of Actuaries are awarded will be decided by representatives of the Institute by looking at individual examination scripts. At the end of year two, students have the opportunity to take a placement year in industry - GN3Y

Queen Mary
University of London

Mathematics with Actuarial Science with Professional Placement. Students also have the option to take advantage of studying abroad - G1N5 Mathematics with Actuarial Science with Professional Placement.

Year 1

Semester A
2 compulsory level 4 modules

MTH4000 [4] Programming in Python I
MTH4113 [4] Numbers, Sets and Functions

Semester B
2 compulsory level 4 modules

BUS137 [4] Economics for Business Management
MTH4115 [4] Vectors and Matrices

Semester A & B
2 compulsory level 4 modules

MTH4400 [4] Applied Calculus
MTH4600 [4] Applied Probability & Statistics

MTH4112 [4] Actuarial Professional Development I [Compulsory zero credit module covering both semesters]

Year 2

Semester A
Four compulsory modules
BUS241 [5] Corporate Financial Reporting
MTH5124 [5] Actuarial Mathematics I
MTH5129 [5] Probability and Statistics II
MTH5212 [5] Applied Linear Algebra

Semester B
Four compulsory modules
MTH5120 [5] Statistical Modelling I
MTH5125 [5] Actuarial Mathematics II
MTH5126 [5] Statistics for Insurance
MTH5131 [5] Actuarial Statistics

Year long
MTH5127 [5] Actuarial Professional Development II [Compulsory zero credit module]

Year 3

Semester A
Two compulsory modules

BUS341 [6] Corporate Financial Management
MTH6154 [6] Financial Mathematics I*

Choose two from:
MTH6141 [6] Random Processes*
MTH6157 [6] Survival Models*
MTH6151 [6] Partial Differential Equations

MTH6102 [6] Bayesian Statistical Methods

MTH5127 [5] Actuarial Professional Development II [Compulsory zero credit module]

Semester B
Choose four from:
MTH6112 [6] Actuarial Financial Engineering*
MTH6113 [6] Mathematical Tools for Asset Management*
MTH6139 [6] Time Series*
MTH6101 [6] Introduction to Machine Learning*
MTH6150 [6] Numerical Computing with C and C++
MTH6142 [6] Complex Networks
MTH6138 [6] Third-year Project

*Students seeking exemption from the maximum number of IFoA examinations must take all modules marked with *

Academic Year of Study FT - Year 1

Module Title	Module Code	Credits	Level	Module Selection Status	Academic Year of Study	Semester
Programming in Python I	MTH4000	15	4	Compulsory	1	Semester 1
Number, Sets and Functions	MTH4113	15	4	Compulsory	1	Semester 1
Economics for Business Management	BUS137	15	4	Compulsory	1	Semester 1
Vectors and Matrices	MTH4115	15	4	Compulsory	1	Semester 1
Applied Calculus	MTH4400	30	4	Compulsory	1	Semesters 1 & 2
Applied Probability & Statistics	MTH4600	30	4	Compulsory	1	Semesters 1 & 2
Actuarial Professional Development I	MTH4112	0	4	Compulsory	1	Semesters 1 & 2

Academic Year of Study FT - Year 2

Module Title	Module Code	Credits	Level	Module Selection Status	Academic Year of Study	Semester

Programme Title: BSc Actuarial Science; BSc Actuarial Science with Year Abroad; Sc Actuarial Science with Professional Placem

Module Title	Module Code	Credits	Level	Module Selection Status	Academic Year of Study	Semester
Corporate Financial Reporting	BUS241	15	5	Compulsory	2	Semester 1
Actuarial Mathematics I	MTH5124	15	5	Compulsory	2	Semester 1
Applied Linear Algebra	MTH5212	15	5	Compulsory	2	Semester 1
Actuarial Professional Development II	MTH5127	0	5	Compulsory	2	Semesters 1 & 2
Statistical Modelling I	MTH5120	15	5	Compulsory	2	Semester 2
Actuarial Mathematics II	MTH5125	15	5	Compulsory	2	Semester 2
Statistics for Insurance	MTH5126	15	5	Compulsory	2	Semester 2
Actuarial Statistics	MTH5131	15	5	Compulsory	2	Semester 2
Probability and Statistics II	MTH5129	15	5	Compulsory	2	Semester 1

Academic Year of Study   FT - Year 3

Module Title	Module Code	Credits	Level	Module Selection Status	Academic Year of Study	Semester
Corporate Financial Management	BUS341	15	6	Compulsory	3	Semester 1
Random Processes	MTH6141	15	6	Elective	3	Semester 1
Financial Mathematics I	MTH6154	15	6	Compulsory	3	Semester 1
Survival Models	MTH6157	15	6	Elective	3	Semester 1
Partial Differential Equations	MTH6151	15	6	Elective	3	Semester 1
Bayesian Statistical Methods	MTH6102	15	6	Elective	3	Semester 1

Queen Mary
University of London

Programme Title: BSc Actuarial Science; BSc Actuarial Science with Year Abroad; Sc Actuarial Science with Professional Placem

Module Title	Module Code	Credits	Level	Module Selection Status	Academic Year of Study	Semester
Actuarial Financial Engineering	MTH6112	15	6	Elective	3	Semester 2
Mathematical Tools for Asset Management	MTH6113	15	6	Elective	3	Semester 2
Time Series	MTH6139	15	6	Elective	3	Semester 2
Introduction to Machine Learning	MTH6101	15	6	Elective	3	Semester 2
Numerical Computing with C and C++	MTH6150	15	6	Elective	3	Semester 2
Complex Networks	MTH6142	15	6	Elective	3	Semester 2
Third-year Project	MTH6138	15	6	Elective	3	Semester 2
Actuarial Professional Development II	MTH5127	0	5	Compulsory	3	Semesters 1 & 2

What are the entry requirements?

For UK applicants, we require 3 GCE A-levels at AAA–including Mathematics at Grade A. Grade C or 4 in GCSE English Language is also required.

International Baccalaureate: Acceptable on its own and combined with other qualifications.
Subjects and grades required: 34–36 points total including Higher Level Mathematics at grade 6.

Non-UK applicants: Equivalent qualifications may be accepted. IELTS: 6.0 (with a minimum of 5.5 in all sections) is required.

How will the quality of the programme be managed and enhanced? How do we listen to and act on your feedback?

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

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

The quality of individual modules is monitored by DoE and DDoE, 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 School operates an Education Committee, which advises the School's Director of Education 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 for approval to Taught Programmes Board. Student views are incorporated in this Committee's work in a number of ways, such as through the Student Voice Committee and consideration of student surveys.

All Schools operate an Annual Programme Review (APR) 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 Student Experience Action Plan (SEAP) which is the summary of the School's work throughout the year to monitor academic standards and to improve the student experience. 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 the NSS and module evaluations.

Every 5-6 years the School undergoes a Periodic Review of its teaching provision, by a panel consisting of experts external to the School. The process is organised at a School-level basis with the Director of Education 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.

The Student Voice Committee provides a formal means of communication and discussion between the School and its students. The committee consists of student representatives from each year of the programmes, together with appropriate representation from staff within the School. It is designed to respond to both the general needs of students, and subject specific concerns, as well as act as a forum for discussing programme and module developments. Student Voice Committees meet regularly throughout the year.

The Director of Education and and Deputy Director of Education both attend the Student Voice Committee and the School's Education Committee and ensure that student feedback is fed into the review of modules and programmes. Student views are also incorporated in the Committee's work in other ways, such as through the National Student Survey (NSS) and student module evaluations.

What academic support is available?

Each student is allocated a personal academic advisor, 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 Education Services Team. Each programme is assigned a Programme Director and all teaching is overseen by the Education Committee, which includes the Programme Directors and is chaired by the Director of Education. Programmes are monitored continuously and reviewed every few years by the Education Committee.

How inclusive is the programme for all students, including those with disabilities?

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.

Programme-specific rules and facts

Programme Title: BSc Actuarial Science; BSc Actuarial Science with Year Abroad; Sc Actuarial Science with Professional Placem

Links with employers, placement opportunities and transferable skills

The School of Mathematical Sciences has established a Professional Advisory Board with representatives from Lloyds and other major employers of actuaries. It is hoped that this will enable students on the programme to have opportunities to gain insight into the actuarial profession.

The School recognises the importance of vacation internships and placement and is developing a database of employers offering or interested in placements and internships.

Programme Specification Approval

Person completing Programme Specification:
Simon Rawstron (ESM-Education Services Manager), Shabn

Person responsible for management of programme:
Shabnam Beheshti, DoE for School of Mathematical Science

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

Date Programme Specification approved by Taught Programmes Board:

Queen Mary
University of London