Programme Title: BSc FT Mathematics with Foundation

# Programme Specification

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| Awarding Body/Institution | Queen Mary University of London |
| Teaching Institution | Queen Mary University of London |
| Name of Final Award and Programme Title | BSc FT Mathematics with Foundation |
| Name of Interim Award(s) | FdCert - as an exit award only |
| Duration of Study / Period of Registration | 4 years |
| QM Programme Code / UCAS Code(s) | GGX1 |
| QAA Benchmark Group | |
| FHEQ Level of Award | Level 3 |
| 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 |
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| School of Biological & Chemical Sciences |
| School of Mathematical Sciences |
| School of Physics and Astronomy |
| School of Electronic Engineering & Computer Science |
| School of Engineering & Materials Science |

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

The Science and Engineering Foundation Programme (SEFP) provides an alternative route onto undergraduate degrees, combining a foundation year with a traditional university degree in an integrated four- or five-year programme (1+3 or 1+4). QMUL offers tailored pathways for subjects across science and engineering; go to the foundation programme website to see full details of all SEFP options.[ http://www.sefp.qmul.ac.uk/]

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Foundation programmes are open to home/EU and international students and taught entirely at the Mile End campus by university staff. As a foundation student, you have access to all QMUL's facilities and will be a full-time student of the university. Both UK/EU and international students should apply directly through UCAS.

Highlights:

- Opportunity to progress onto engineering undergraduate degrees
- Study at campus-based university within easy reach of all of London's attractions
- Eligible for funding through Student Loans Company (UK/EU students only)
- Full access to all student facilities (academic, welfare, IT, library, social and sport)
- Experienced and well-qualified teaching staff, many of whom teach on undergraduate and postgraduate programmes

## Aims of the Programme

Our four-year mathematical foundation programme will equip you with the skills and knowledge to undertake an undergraduate degree in mathematical sciences. Successful completion of this programme at the appropriate level guarantees you a place on a range. You can also use your foundation qualification to progress onto degree programmes at other UK or overseas universities.

## What Will You Be Expected to Achieve?

Pass of a minimum of 105 credits (7 modules) with an overall average of ≥60%

| Academic Content: | |
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| A1 | • Manage study time more effectively and assimilate information from lectures and other sources in an efficient manner. |
| A2 | • Develop a wider range of skills for successful study in an academic environment, communicate more effectively both orally and in writing, in English, and be better prepared to give formal presentations and able to participate more actively in seminars. |
| A3 | • Understanding and practical experience in basic programming and related concepts, including expressions, assignment, if and while statements, arrays, functions, simple input and output, sorting and searching algorithms. Understanding of basic programming and underlying theoretical concepts, including language concepts and regular expressions. |
| A4 | • Manipulate simple algebraic expressions and multiply and divide polynomials in one indeterminate. |
| A5 | • Describe and apply the concept of a field to a range of natural phenomena, and describe and apply the theory of waves to a ranger of natural phenomena. Answer qualitative and quantitative questions at an appropriate level on the topics listed in the Module Synopsis. |
| A6 | • Appreciate that arithmetic and the laws of arithmetic for integers and rational numbers have counterparts in the arithmetic of polynomials, propositions and sets and be able to carry out simple calculations. for all the above. Understand how prepositional logic extends propositional logic and be able to recognise and construct simple logical arguments expressed using prepositional logic. |

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| A 7 | • Explain the purpose and development of standardisation within the profession and solve simple problems relating to mechanical applications of linear and rotational motion. Describe some positive and negative effects of friction in engineering situations. |

| Disciplinary Skills - able to: | |
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| B 1 | • Present data in reports in a readily-assimilated fashion, and in accord with scientific conventions. Research and write an essay in a suitable style with a suitably referenced bibliography. Express themselves clearly in the language and vocabulary of their subjects and give well prepared oral presentations. |
| B 2 | • Solve linear equations, make simple estimations and sort decimals in a given order, convert numbers from numeral form to their word name, and vice-versa. Carry out mixed arithmetical operations in the correct order and calculate the GCD and LCM of pairs of rational numbers. |
| B 3 | • Solve simple problems in three dimensional co-ordinate geometry, represent and manipulate complex numbers in various forms, differentiate and integrate a wide range of functions and solve problems involving comparative rates of change. Be able to construct and analyse simple relations using set operations and construct, represent and analyse graphs and appreciate their role in modeling problems of connectivity and partitioning. |
| B 4 | • Solve a wide variety of logarithmic, exponential and trigonometric equations, solve problems relating to a circle, parabola, ellipse and hyperbola and apply the remainder theorem and factors to polynomials. Apply differentiation to locate maxima and minima, and sketch simple polynomials and solve problems involving simple rates of change. |
| B 5 | • Understanding of key software development processes, including problem solving and specification, pseudo code and tracing a program. |
| B 6 | • Solve basic problems relating to stresses and strains in components of simple shape. Describe the solutions to basic problems relating to IC engines. |

| Attributes: | |
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| C 1 | • To grasp the principles and practices of their field of study. |
| C 2 | • To produce analyses which are grounded in evidence. |
| C 3 | • To apply analytical skills to investigate unfamiliar problems. |
| C 4 | • To work individually and in collaboration with others. |
| C 5 | • To develop a strong sense of intellectual integrity. |
| C 6 | • To acquire substantial bodies of new knowledge. |

| QMUL Model Learning Outcomes - Level 4: | |
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| D 1 | |

## How Will You Learn?

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| Independent study |

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For every hour spent at university you will be expected to complete additional hours of independent study. Your individual study time could be spent preparing for, or following up on formal study sessions; reading; assessing data from experiments; completing lab reports; and revising for examinations.
The direction of your individual study will be guided by the formal study and laboratory sessions you attend, along with your reading and assignments. However, we expect you to demonstrate an active role in your own learning by reading widely and expanding your own knowledge, understanding and critical ability.
Independent study will foster in you the ability to identify your own learning needs and determine which areas you need to focus on to become proficient in your subject area. This is an important transferable skill and will help to prepare you for the transition to working life.

## How Will You Be Assessed?

To pass a module, you must achieve an overall mark of 40% or above. The overall mark in most modules is based on your performance in both the examination and coursework, the weighting of these two components typically being 70% and 30% respectively. You must attend a minimum of 75% of all scheduled classes and submit a corresponding level of coursework assignments for each module.

## How is the Programme Structured?

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

Structure
The programme structure outlined below is indicative of what you will study. It may change slightly from year to year as new topics are introduced and after we have listened to current student feedback on teaching.

The mathematics foundation programme modules are designed to best prepare you for continuing your studies in engineering and materials science at undergraduate level. You will take 8 modules in total over two semesters, starting in September.

Semester 1 - four modules
One from:
SEF030 Communication in Science & Technology
SEF009 English I

Compulsory modules:
SEF026 Essential Foundation Mathematics
SEF001 Mathematics I

One from:
SEF005 Physics - Mechanics and Materials
SEF034 Computing
SEF038 Introduction to Modern Physics

Semester 2 - four modules
For students taking English I in Semester 1:
SEF030 Communication in Science & Technology

Compulsory modules:
SEF002 Mathematics II

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SEF006 Physics- Fields and Waves
SEF015 Discrete Mathematics

Elective module:
SEF024 Introduction to Engineering
SEF0XX Introduction to Business Information Systems

## 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 |
|---|---|---|---|---|---|---|---|
| Communication in Science & Technology | SEF030 | 15 | 3 | Core | | Semesters 1 & 2 | No |
| English I | SEF009 | 15 | 3 | Elective | | Semester 1 | No |
| Introduction to Modern Physics | SEF038 | 15 | 3 | Elective | | Semester 1 | No |
| Computing | SEF034 | 15 | 3 | Elective | | Semester 1 | No |
| Essential Foundation Mathematics | SEF026 | 15 | 3 | Compulsory | | Semester 1 | No |
| Mathematics I | SEF001 | 15 | 3 | Compulsory | | Semester 1 | No |
| Mathematics II | SEF002 | 15 | 3 | Compulsory | | Semester 2 | No |

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| Module Title | Module Code | Credits | Level | Module Selection Status | Academic Year of Study | Semester | QMUL Model |
|---|---|---|---|---|---|---|---|
| Physics - Fields and Waves | SEF006 | 15 | 3 | Compulsory | | Semester 2 | No |
| Discrete Mathematics | SEF015 | 15 | 3 | Compulsory | | Semester 2 | No |
| Introduction to Engineering | SEF024 | 15 | 3 | Elective | | Semester 2 | No |
| Physics - Mechanics and Materials | SEF005 | 15 | 3 | Elective | | Semester 1 | No |
| Introduction to Business Information Systems | SEF0XX | 15 | 3 | Elective | | Semester 2 | No |

## What Are the Entry Requirements?

UK applicants
Admissions requirements are lower than the requirements for direct entry to a three-year BSc degree course. As a general guide, recent school-leavers must normally have at least BBC from 3 A levels including Mathematics. Applications from mature students will be considered on an individual basis, taking account of both educational background and other relevant experience. For further details, please see the School of Mathematical Sciences web site.

International applicants
Normally you must have completed at least a high school diploma, grade 12, or an equivalent level of schooling in your own country. You must have good high school results and should have studied mathematics to an advanced level. Applications from students with international A-levels in science and mathematics are also welcome.
Students are required to have passed a UKBA Secure English Language Test such as IELTS or TOEFL. The minimum requirements for admission to the SEFP are: IELTS overall minimum of 5.0; TOEFL overall minimum of 180 (CB TOEFL) or 64 (IB TOEFL).
References are also important. However, each application is assessed individually and international applicants are welcome to contact the School of Mathematical Sciences to discuss their own particular situation before applying.
Further info
For more information, contact us:
Tel: +44 (0)20 7882 5470
email: maths-ug@qmul.ac.uk
www.maths.qmul.ac.uk

For further information you can also call the Enquiries Hotline (UK callers only) on Freephone 0800 376 1800. International students should contact the Admissions Office:
Tel: +44 (0)20 7882 5511
email: admissions@qmul.ac.uk
www.qmul.ac.uk/international

## 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 Committees meets regularly throughout the year.

The Teaching & Learning Committee advises the School's 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 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 consideration of student surveys and input from the SSLC.

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

Each student is provided with a personal academic guidance tutor (or "advisor") who is their main point of contact for advice regarding academic matters and for assistance with pastoral concerns, throughout their whole programme. Students can see their advisors in their office hours or arrange an appointment via email. Moreover, if and when advisors are unavailable or cannot help with a specific problem, the School has several Senior Advisors to assist with student concerns.

The School also operates a PASS programme for peer guidance.

## 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

In today's competitive job market, it is not always enough to graduate with a good degree. Employers also expect you to have a range of skills and students take this degree programme because they are interested in both business and finance, and many go on to work for financial institutions and other businesses. Others go on to graduate training schemes in a variety of companies such as Enterprise-Rent-a-Car.

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 course students learn to apply mathematical techniques to situations across the sciences and

other areas such as finance, computing and engineering. 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

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| **Person completing Programme Specification** | Professor Shahn Majid |
| **Person responsible for management of programme** | Dr Hicham Adjali |
| **Date Programme Specification produced/amended by School Learning and Teaching Committee** | |
| **Date Programme Specification approved by Taught Programmes Board** | |