

Programme Title: International Science and Engineering Foundation Programme (Mathematics)



## 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:	Foundation Certificate (FdCert) Mathematics
Name of interim award(s):	
Duration of study / period of registration:	1 year
QMUL programme code / UCAS code(s):	FGH4, UCFF-QMSEFP1 , USMAS
QAA Benchmark Group:	
FHEQ Level of Award :	Level 3
Programme accredited by:	
Date Programme Specification approved:	21 Apr 2021
Responsible School / Institute:	School of Mathematical Sciences

Schools / Institutes which will also be involved in teaching part of the programme:

School of Biological & Behavioural Sciences

School of Physical & Chemical Sciences

School of Electronic Engineering & Computer Science

School of Languages, Linguistics & Film

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

### Programme outline

The FdCert International Science and Engineering Foundation Programme (ISEFP Mathematics) provides an alternative route onto a range of Mathematics undergraduate degrees. QMUL offers tailored pathways for subjects across science and engineering.

Our ISEFP Mathematics is open to international students and face-to-face sessions are taught entirely at the Mile End campus by university staff. In-line with Queen Mary's 2030 Strategy, high quality learning resources and interactive sessions with academic staff will be available online. 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 apply to Mathematics undergraduate degrees after completing the Foundation year at the appropriate level
- Study at campus-based university within easy reach of all of London's attractions
- 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

The ISEFP (Mathematics) 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 of undergraduate programmes in the School of Mathematical Sciences including:

Mathematics BSc

Pure Mathematics BSc

Mathematics and Statistics BSc

Mathematics with Actuarial Science BSc

Mathematics with Finance and Accounting BSc

These degree programmes can also be taken with the option of a year abroad or professional placement.

### What will you be expected to achieve?

In order to be eligible for entry onto a degree programme you will be expected to:

- Pass 105 credits including SEF030 Communication in Science and Technology, SEF041 Mathematics B, SEF015 Discrete Mathematics and SEF026 Essential Foundation Mathematics.
- Achieve an overall average of 60%, with a weighted average of 60% across SEF041 and SEF015.
- For progression onto particular programmes there may be additional requirements.

Please check the handbook or contact [fedu@qmul.ac.uk](mailto:fedu@qmul.ac.uk) for more information.

### 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:

A1	Manage study time more effectively and assimilate information from lectures and other sources in an efficient manner.
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A 2	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.
A 3	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.
A 4	Manipulate simple algebraic expressions and multiply and divide polynomials in one indeterminate.
A 5	Describe and apply the concept of a field to a range of natural phenomena, and describe and apply the theory of waves to a range of natural phenomena. Answer qualitative and quantitative questions at an appropriate level on the topics listed in the Module Synopsis.
A 6	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 propositional logic extends propositional logic and be able to recognise and construct simple logical arguments expressed using propositional logic.

Disciplinary Skills - able to:	
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.

Attributes:	
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.

C6 • To acquire substantial bodies of new knowledge.

## How will you learn?

### Independent study

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 tutorial 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 varies per module.

## 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.

### 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.

You will take 8 modules in total over two semesters, starting in September.

### Year Long Modules

Compulsory modules:

SEF041 Mathematics B

### Semester A

Based on your IELTS score, either:

SEF030A Communication in Science & Technology OR

SEF009 English 1

Compulsory modules:

SEF026 Essential Foundation Mathematics

Choose one from:

SEF005 Physics - Mechanics and Materials

SEF034 Computing

### Semester 2

Only for those who take SEF009 in Semester 1:

SEF030B Communication in Science & Technology (CST)

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Compulsory modules:

SEF015 Discrete Mathematics

SEF006 Physics - Fields and Waves

Additional Elective options IF taking SEF030 in Semester A:

SEF024 Introduction to Engineering OR

SEF035 Digital Electronics and Computer Systems

Academic Year of Study FT - Year 3

Module Title	Module Code	Credits	Level	Module Selection Status	Academic Year of Study	Semester
Communication in Science & Technology	SEF030	15	3	Core	0	Semester 1 or 2
Mathematics B	SEF041	30	3	Compulsory	0	Semesters 1 & 2
Essential Foundation Mathematical Skills	SEF026	15	3	Compulsory	0	Semester 1
Physics - Mechanics and Materials	SEF005	15	3	Elective	0	Semester 1
Computing	SEF034	15	3	Elective	0	Semester 1
Physics - Fields and Waves	SEF006	15	3	Compulsory	0	Semester 2
Discrete Mathematics	SEF015	15	3	Compulsory	0	Semester 2
English 1	SEF009	15	3	Elective	0	Semester 1
Introduction to Engineering	SEF024	15	3	Elective	0	Semester 2
Digital Electronics and Computer Systems	SEF035	15	3	Elective	0	Semester 2

**What are the entry requirements?**

The International Science and Engineering Foundation programme (ISEFP) is suitable for international students with qualifications up to AS-level/Year 12 or equivalent, i.e. students who have not completed A-level in their home countries or in the UK.

You will need to provide transcripts (official report/certificate of grades or percentages) from one of the following:

International High School Diploma, or an equivalent diploma for the final year of schooling in your country, including

mathematics in your final year. Please email [isefp admissions@qmul.ac.uk](mailto:isefp admissions@qmul.ac.uk) to enquire about specific entry requirements.

We consider every application on its individual merits and will take into consideration your individual educational experiences and context.

### **How will the quality of the programme be managed and enhanced? 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 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.

### **What academic support is available?**

Each student is provided with an 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 (Peer Assisted Study Support) programme for peer guidance.

### **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**

N/A

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### 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.

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## Programme Specification Approval

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**Person completing Programme Specification:**

Sarahlouse Lawrence

**Person responsible for management of programme:**

Dr Mark Walters

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

**Date Programme Specification approved by Taught Programmes Board:**

21 Apr 2021