

Programme Title: FFY3 MSci FT Physics with Foundation



## Programme Specification

Awarding Body/Institution	Queen Mary University of London
Teaching Institution	Queen Mary University of London
Name of Final Award and Programme Title	MSci Physics with Foundation
Name of Interim Award(s)	FdCert - as an exit award only
Duration of Study / Period of Registration	5 years
QM Programme Code / UCAS Code(s)	FFX4
QAA Benchmark Group	
FHEQ Level of Award	Level 3
Programme Accredited by	
Date Programme Specification Approved	
Responsible School / Institute	School of Physics and Astronomy

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

School of Biological & Chemical Sciences

School of Mathematical Sciences

School of Engineering & Materials Science

School of Electronic Engineering & Computer Science

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

### 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(BSc)- or five(MSci) -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/>]

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 into physics 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 five-year physical sciences foundation programme will equip you with the skills and knowledge to undertake an masters-level degree in physical sciences. Successful completion of this programme at the appropriate level guarantees you a place on one of the following degrees at QMUL, without having to re-apply through UCAS: Physics MSci, Astrophysics MSci, Theoretical Physics, Physics with Particle Physics MSci, Physics (with a year abroad) MSci or Physics with Astrophysics MSci. 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  $\geq 60\%$

### Academic Content:

A 1	• A review of mathematical notation, basic principles of arithmetic and algebra, functions and graphs, coordinate geometry and trigonometry; and demonstrates how these principles may be applied to solve problems in science and mathematics.
A 2	• Mathematical topics including algebra, functions, geometry and trigonometry, differential and integral calculus, and an introduction introduction to complex numbers, numerical methods, differential equations, vector analysis and power series.
A 3	• Concepts of physics which covers the following topics: Newtonian mechanics, including statics, linear and rotational dynamics; forces and energy, and their role in the molecular structure of matter, properties of liquids and gases; basic concepts of thermodynamics.
A 4	• Introduction to atomic structure: electrons, protons and neutrons, mass and atomic numbers, isotopes and radioactivity, measures of size of atoms and ions.
A 5	• Concepts of physics which cover the role of fields, in particular the gravitational and electromagnetic fields; the description of natural phenomena and the widespread occurrence of oscillations and wave motion with examples from the physics of sound and light.
A 6	• Concepts of Physics which cover the following topics: aspects of electrical theory (current and charge, resistance, capacitors, circuits and meters); atomic structure and properties of the electron; the nucleus, radioactive decay and nuclear energy; an introduction to quantum physics.
A 7	• An introduction to arithmetic beyond the integers and rational numbers: modulo arithmetic, and the arithmetic of polynomials, logical propositions and sets. Applications of these concepts in prepositional logic, relational algebra and graph theory
A 8	• An introduction to the application of scientific principles to solve practical engineering problems. It includes discussion of the development of the engineering field and standards, as well as basic engineering principles, mechanical applications and stress analysis

A9	• Improve communication skills for scientists and engineers, including study skills, academic writing, data presentation and analysis, information retrieval, and oral communication skills.
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Disciplinary Skills - able to:	
B1	to have a good understanding of A-level mathematical techniques and their usage in solving problems.
B2	to develop an understanding of a variety of concepts of the physical world.
B3	be able to use mathematical formulae to do elementary calculations and interpret the outcomes in a physical context.
B4	to present data in reports in a readily-assimilated fashion, and in accord with scientific conventions.

Attributes:	
C1	• To grasp the principles and practices of their field of study
C2	• To produce analyses which are grounded in evidence
C3	• To apply their analytical skills to investigate unfamiliar problems
C4	• To work individually and in collaboration with others
C5	• To develop a strong sense of intellectual integrity
C6	• To acquire substantial bodies of new knowledge

QMUL Model Learning Outcomes - Level 4:	
D1	<input style="width: 80%; height: 20px;" type="text"/>

### 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; and revising for examinations. The direction of your individual study will be guided by the formal module structure that you choose and laboratory sessions you attend at level 4-6, 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, or 80% and 20%. 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).

It may change slightly from year to year as new topics are introduced and after we have listened to current student feedback on teaching.

Pass a minimum of 105 credits (7 modules), including the following modules:

SEF030, SEF001, SEF002, SEF005, SEF006, SEF007.

Pass a minimum of 7 modules with average of at least 60% over all 8 modules.

### Semester A

One of:

SEF030 Communication in Science & Technology (CST)

SEF009 English 1 (E1)

Compulsory:

SEF001 Mathematics 1 (M1)

SEF005 Physics – Mechanics and Materials (P1)

One of:

SEF026 Essential Foundation Mathematics (EFM)

SEF034 Computing

SEF038 Introduction to Modern Physics

### Semester B

\*For students taking SEF009 in Semester 1

SEF030\* Communication in Science & Technology (CST)

Compulsory

SEF002 Mathematics 2 (M2)

SEF006 Physics – Fields and Waves (P2)

SEF007 Physics – Electricity and Atomic Physics (P3)

Other options:

SEF015 Discrete Mathematics (DM)

SEF024 Introduction to Engineering (IE)

### 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

Module Title	Module Code	Credits	Level	Module Selection Status	Academic Year of Study	Semester	QMUL Model
Communication in Science and Technology	SEF030	15	3	Core		Semesters 1 & 2	<input type="checkbox"/> No
Mathematics I	SEF001	15	3	Compulsory		Semesters 1 & 2	<input type="checkbox"/> No
Mathematics II	SEF002	15	3	Compulsory		Semester 2	<input type="checkbox"/> No
Physics(Mechanics and Materials)	SEF005	15	3	Compulsory		Semester 1	<input type="checkbox"/> No
Physics(Fields and Waves)	SEF006	15	3	Compulsory		Semester 2	<input type="checkbox"/> No
Physics(Electricity and Atomic Physics)	SEF007	15	3	Compulsory		Semester 2	<input type="checkbox"/> No
English I	SEF009	15	3	Elective		Semester 1	<input type="checkbox"/> No
Introduction to Engineering	SEF024	15	3	Elective		Semester 2	<input type="checkbox"/> No
Computing	SEF034	15	3	Elective		Semester 1	<input type="checkbox"/> No

Module Title	Module Code	Credits	Level	Module Selection Status	Academic Year of Study	Semester	QMUL Model
Essential Foundation Mathematics	SEF026	15	3	Elective		Semester 1	No
Discrete Mathematics	SEF015	15	3	Elective		Semester 2	No
Introduction to Modern Physics	SEF038	15	3	Elective		Semester 1	No

### What Are the Entry Requirements?

Entry requirements for the SEFP are lower than for direct entry to a four-year MSci. If you would like to discuss your individual situation, you can contact the SEFP admissions team via email at [physics@qmul.ac.uk](mailto:physics@qmul.ac.uk)

A-level: Grade B in maths and physics and Grade C in any other subjects.

We can accept students without A levels in Maths and Physics, however, we require at least a GCSE in Maths. Offers will then depend on the courses taken.

BTEC National Diploma: pass the BTEC National Diploma with MMM, Maths and Physics at M and M.

### 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

Upon completion of the 4-year programme, many Physics graduates go into: business, IT, Engineering, Retail, and science including education, ordered by popularity.

Physicists develop a broad range of skills for the workplace including: analysis and data modelling, communication with presentations and reports, investigation, IT skills and programming, problem solving, bridging theoretical and practical knowledge.

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## Programme Specification Approval

**Person completing Programme Specification**

Prof David Arrowsmith

**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**