

Programme Title: BSc Physics with Foundation



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 Physics with Foundation
Name of interim award(s):	Foundation Certificate (FdCert) - as an exit award only
Duration of study / period of registration:	4 years
QMUL programme code / UCAS code(s):	FFX0, USEF-QM4PHY1 , USPHY
QAA Benchmark Group:	
FHEQ Level of Award :	Level 3
Programme accredited by:	
Date Programme Specification approved:	13 Dec 2021
Responsible School / Institute:	School of Physical and Chemical Sciences

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

School of Biological & Behavioral Sciences

School of Mathematical Sciences

School of Languages, Linguistics & Film

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

Programme outline

The BSc Physics with Foundation provides an alternative route onto a Physics undergraduate degree, combining a foundation year with a traditional university degree in an integrated four year programme (1+3 years). QMUL offers tailored pathways for subjects across science and engineering.

BSc Physics with Foundation is open to UK and EU/International students. Our 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 and EU/International students should apply directly through UCAS.

Highlights:

- Opportunity to progress onto 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

The initial year of the integrated BSc Physics with Foundation will equip you with the skills and knowledge to undertake an undergraduate degree in physical sciences. Successful completion of this programme at the appropriate level guarantees you a place on one of the following physics degrees at QMUL, without having to re-apply through UCAS:

Physics BSc

Astrophysics BSc

Theoretical Physics BSc

Physics with Particle Physics BSc

Physics with Astrophysics BSc

What will you be expected to achieve?

- Pass 105 credits including SEF030 Communication in Science and Technology, SEF040/41 Mathematics A or B, SEF005 Physics - Mechanics and Materials, SEF006 Physics - Fields and Waves and SEF007 Physics - Electricity and Atomic Physics.
- Achieve a weighted average of $\geq 50\%$ across all modules.
- For progression onto particular programmes there may be additional requirements.

Please check the handbook or contact 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:

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.
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A2	Mathematical topics including algebra, functions, geometry and trigonometry, differential and integral calculus, and an introduction to complex numbers, numerical methods, differential equations, vector analysis and power series.
A3	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.
A4	Introduction to atomic structure: electrons, protons and neutrons, mass and atomic numbers, isotopes and radioactivity, measures of size of atoms and ions.
A5	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.
A6	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.
A7	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 propositional logic, relational algebra and graph theory
A8	Improve communication skills for scientists and engineers, including study skills, academic writing, data presentation and analysis, information retrieval, and oral communication skills.

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

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 and taught 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. You must also meet the necessary progression requirements in order to progress to the next year, at present this is a minimum of 50% average across all modules though this is subject to change.

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, depending on your previous Maths qualifications, either:

SEF040 Mathematics A (double module, runs across semester 1 and 2)

SEF041 Mathematics B (double module, runs across semester 1 and 2)

Semester 1

Compulsory

SEF005 Physics – Mechanics and Materials

SEF026 Essential Foundation Mathematics (EFM)

SEF030 Communication in Science & Technology (CST)

Semester 2

Compulsory

SEF006 Physics – Fields and Waves

SEF007 Physics – Electricity and Atomic Physics

SEF015 Discrete Mathematics

Academic Year of Study

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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
Mathematics A	SEF040	30	3	Elective	0	Semesters 1 & 2
Mathematics B	SEF041	30	3	Elective	0	Semesters 1 & 2
Physics - Mechanics and Materials	SEF005	15	3	Compulsory	0	Semester 1
Essential Foundation Mathematical Skills	SEF026	15	3	Compulsory	0	Semester 1
Physics - Fields and Waves	SEF006	15	3	Compulsory	0	Semester 2
Physics - Electricity and Atomic Physics	SEF007	15	3	Compulsory	0	Semester 2
Discrete Mathematics	SEF015	15	3	Compulsory	0	Semester 2

What are the entry requirements?

Entry requirements for the BSc Physics with Foundation are lower than for direct entry to a three-year BSc. If you would like to discuss your individual situation, you can contact the admissions team via email at spcs-enquiries@qmul.ac.uk

A-level: Grades CCC at A-Level.

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: See our detailed subject and grade requirements: <https://www.qmul.ac.uk/undergraduate/apply/entry/btec/>

IB: International Baccalaureate Diploma with a minimum of 26 points overall, including 4,4,4 from three Higher Level subjects. Higher Level Mathematics or Physics is preferred.

GCSE: Minimum five GCSE passes including English and Maths at grade C or 4.

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 Education Committee 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 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

Links with employers, placement opportunities and transferable skills

Upon completing the 4-year programme, many graduates continue their studies with a PhD or MSc, often as a precursor to a career in research. The flexibility of the programme can prepare you for careers in specialist areas of physics and science more widely, if you have a particular area of interest.

Skills developed through studying physics – such as numeracy, data analysis, coding and problem solving – are also highly transferable into other sectors, including energy, business, marketing, engineering, technology, IT and finance.

Recent graduates of Physics degrees have been hired by:

UK Space Agency
JP Morgan Chase & Co. (financial services)
European Astronaut Centre

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Airbus (aeronautical)
KPMG (financial services)
CGI (IT consultancy)
Toad A.I.
Goldman Sachs (investment banking)
IBM (technology)
Bank of England (banking)
Baclays Corporate (banking)
UK Government Department for Business Energy and Industrial Strategy
Tata Consultancy Services
Fidessa (financial services)
Jacobs (engineering and construction)
Kubick (data consultancy)
MediaCom (marketing)
Yobota (banking software)

Programme Specification Approval

Person completing Programme Specification:

Sarahlouise Lawrence

Person responsible for management of programme:

Dr Lesley Howell

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

13 Dec 2021

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

13 Dec 2021