

Programme Title: JJX3 BEng Materials Science 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:	BEng Materials Science 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):	JJX3, USEF-QM4MTL1, USMTS
QAA Benchmark Group:	
FHEQ Level of Award :	Level 3
Programme accredited by:	
Date Programme Specification approved:	06 Jan 2022
Responsible School / Institute:	School of Engineering & Materials Science

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

School of Biological & Behavioural Sciences

School of Languages, Linguistics & Film

School of Physical & Chemical Sciences

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

Programme outline

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

BEng Materials Science with Foundation is open to UK and EU/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 progress onto a Materials Science undergraduate degree
- 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 foundation year will equip you with the skills and knowledge to undertake an undergraduate degree in materials science. Successful completion of this programme at the appropriate level guarantees you a place on a range of materials science programmes including:

Materials Science and Engineering BEng

What will you be expected to achieve?

- Pass 105 credits including SEF030 Communication in Science and Technology, SEF003 Introductory Chemistry, SEF005 Physics - Mechanics and Materials and SEF040 Mathematics A or SEF041 Mathematics B
- Achieve an overall average of $\geq 55\%$, including $\geq 55\%$ in SEF040 Mathematics A or SEF041 Mathematics B
- 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:

A1	The purpose of materials science, the spectrum of activities in materials science, theory and practice as applied to materials science problems, the need for standardisation and the development of standards.
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A2	Mechanical properties of commonly used engineering materials; thermal stresses in large structures, the use of factors of safety in design.
A3	Electrons inside the Atom: Ionisation and excitation; hydrogen spectrum, energy levels; Bohr model of the atom, theory of energy levels; periodic table; X-rays and their uses.
A4	Gravitational Fields: Force and potential; Newton's theory of gravitation; planetary fields; satellite motion.
A5	Wave Motion: Progressive waves; wave properties; qualitative treatment of stationary waves; mechanical waves and resonance.
A6	Introduction to atomic structure: electrons, protons and neutrons, mass and atomic numbers, isotopes and radioactivity, measures of size of atoms and ions.
A7	Mathematical topics such as algebra, functions, geometry and trigonometry, and an introduction to the techniques of calculus.

Disciplinary Skills - able to:	
B1	present data in reports in a readily-assimilated fashion, and in accord with scientific conventions
B2	solve problems involving finite, infinite and power series
B3	understand a range of appropriate and relevant experimental techniques and how they are used; be able to perform some of them.

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; 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 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.

The engineering foundation programme modules are designed to best prepare you for continuing your studies in engineering and materials science at undergraduate level. You will take 7 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 modules:

SEF003 Introductory Chemistry

SEF005 Physics - Mechanics and Materials

SEF030 Communication in Science & Technology

Semester 2

Compulsory modules:

SEF004 A Closer Look at Chemistry

SEF006 Physics - Fields and Waves

SEF007 Physics - Electricity and Atomic Physics

Academic Year of Study

Module Title	Module Code	Credits	Level	Module Selection Status	Academic Year of Study	Semester
Communication in Science and Technology	SEF030	15	3	Core	0	Semester 1
Mathematics A	SEF040	30	3	Elective	0	Semesters 1 & 2

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Module Title	Module Code	Credits	Level	Module Selection Status	Academic Year of Study	Semester
Introductory Chemistry	SEF003	15	3	Compulsory	0	Semester 1
Physics - Mechanics and Materials	SEF005	15	3	Compulsory	0	Semester 1
Mathematics B	SEF041	30	3	Elective	0	Semesters 1 & 2
Physics - Electricity and Atomic Physics	SEF007	15	3	Compulsory	0	Semester 2
Physics - Fields and Waves	SEF006	15	3	Compulsory	0	Semester 2
A Closer Look at Chemistry	SEF004	15	3	Compulsory	0	Semester 2

What are the entry requirements?

A-level: Grades BBB at A-Level. The School does not make foundation offers to students if they are studying qualifications that would entitle them to apply directly to the degree programme.

IB: International Baccalaureate Diploma with a minimum of 30 points overall, including 5,5,5 from three Higher Level subjects.

BTEC: See our detailed subject and grade requirements

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

Find out more:

School of Engineering and Materials Science

Tel: +44 (0)20 7882 8736

email: sems-ugadmissions@qmul.ac.uk

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

The materials industry is one of the world's biggest industrial sectors, and is growing every year.

Graduates can work directly with materials, for example as a materials engineer, identifying the best materials at all stages of the manufacturing process. Other potential careers include working as a metallurgist, research scientist, technical engineer, biomedical engineer, manufacturing systems engineer or patent examiner.

Recent Materials Science and Engineering graduates have been hired by:

Aflex Hose Ltd
Alcoa
Arup Group
Jaguar Land Rover
National Nuclear Laboratory
Stone Foundries.

Programme Specification Approval

Person completing Programme Specification:

Sarahlouise Lawrence

Person responsible for management of programme:

Dr Adrian Briggs

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

06 Jan 2022

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

06 Jan 2022