



Queen Mary  
University of London

A close-up photograph of a laser cutting process. A black industrial laser head is positioned above a metal workpiece. A bright orange laser beam is focused on the metal, creating a shower of bright orange sparks that radiate outwards. The background is dark with some blurred lights, suggesting an industrial setting.

**School of Engineering  
and Materials Science**  
Undergraduate study 2021



Students working in our undergraduate teaching laboratory

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Students working on their final year project



Thank you for your interest in studying at Queen Mary University of London. The School of Engineering and Materials Science (SEMS) provides outstanding degree programmes coupled with internationally leading research which is reflected in all our undergraduate programmes.



Queen Mary is a very diverse university so it's great to meet people from all over the world with different points of view"

**Sofie Woods**  
**BEng Mechanical**  
Engineering (2017)



Your time as a student is sure to be life-changing. Queen Mary is part of the prestigious Russell Group, and our graduates are consistently in the top ten graduate starting salaries in the UK. You will be part of a thriving academic community and be taught by high-calibre staff who are leaders in their field.

Not only do we offer a stimulating learning experience and research-led teaching; we pride ourselves on being a friendly and inclusive department, and encourage our students to take advantage of the wealth of extra-curricular activities on offer at Queen Mary.

Our priority is for our students to make the most of their degree and develop their future potential and to have the basis for employment in a range of sectors. 92 per cent of all our graduates are in employment or further study within six months of graduating.

# Why choose Queen Mary University of London?

From our location in the heart of east London to our welcoming campus, world leading research and inspiring teaching, there are many reasons to make Queen Mary your first choice.

## One of the UK's leading universities

- Member of the Russell Group – one of the UK's 24 leading universities
- £25,000 - average starting salary for undergraduates (Destination of Leavers from Higher Education survey for 2016/17 leavers (latest) - data relates to UK domiciled, full-time, first degree students)
- Teaching inspired by our world leading research
- Eight Nobel Prize winners among former staff and alumni
- Top 10 university in the UK for the quality of our engineering research – (Research Excellence Framework 2014)
- Distinguished history dating back to 1123 (the foundation of St Bartholomew's Hospital)

## A friendly community in a great location

- Only university in London able to offer an attractive residential campus at our home in Mile End
- Short walk from the creative, technical and social hubs of Brick Lane and Shoreditch, and close to London's financial centres, the City and Canary Wharf
- Set beside the Regent's Canal in Mile End, our main campus is one stop on the Tube from Stratford's Queen Elizabeth Olympic Park, and minutes from the West End

## Generous support

- In 2017-18, we awarded £1 million in scholarships and prizes

## We are international

- Part of the internationally recognised University of London (UOL)
- Students and Staff from over 160 countries
- Links with leading international universities and opportunities to study abroad on all programmes
- One of the most internationally diverse universities in the world (Times Higher Education World University rankings 2017)

## Exceptional facilities

- £105m spent on new facilities over the past five years
- A brand new £7.5m undergraduate teaching area
- 7,700 square metres of new learning and teaching space with the £39m Graduate centre which opened in 2017



15 mins

To the Gallery spaces and cafés of Hackney Wick



14 mins

To the bars of Hoxton Square



11 mins

To Shoreditch High Street



13 mins

To Queen Elizabeth Olympic Park



4 mins

To beautiful Victoria Park



# Studying engineering, materials and design

## Within the School of Engineering and Materials Science (SEMS), we offer a range of interesting undergraduate degree programmes in three broad areas: Engineering, Materials and Design.

Each of our degree programmes will introduce you to the key academic principles and techniques in your chosen field. You will be taught by staff who are world-leading researchers in their field and experience research-led teaching. In the most recent national assessment of the quality of university research (REF 2014) the School of Engineering and Materials Science was ranked seventh out of 62 institutions conducting research in the area of general engineering.

## Engineering – Aerospace, Biomedical, Chemical, Mechanical, Robotics, and Sustainable Energy

Engineers have a passion for innovation and discovery. We prepare students with sophisticated technical and problem solving skills, allowing them to push boundaries and start exciting careers in technical specialist and leadership roles in a wide range of engineering fields.



The best thing about my course is that it covers both fundamental engineering as well as specialist modules for sustainable energy, providing you with vast knowledge for industrial application. The college has a very good careers service and SEMS has its own Industrial Placement Manager as well.”



**Tsu May Lim**  
MEng Sustainable Energy Engineering with Industrial Experience (2019)



Design features highly in all of our engineering programmes; in your second year, you will undertake a design project where you will work in small groups to design, manufacture and test your own prototype product. This enables you to recognise real world engineering, manufacturing and economic constraints.

## Materials – Materials Science and Engineering

Materials science is the study of the structure, properties and behaviour of all materials, their development and their use in manufacturing. Materials scientists develop new products and technologies that make our lives more convenient, enjoyable, sustainable and safer. Scientists and engineers work with materials scientists to improve existing products and develop innovative technologies to enhance every aspect of our lives.

The study of materials science plays a part in all engineering disciplines. Queen Mary has

been at the forefront of materials science and engineering research and teaching for over 40 years.

## Design – Design, Innovation and Creative Engineering

Design is a crucial aspect of engineering that utilises creative thinking and has traditionally been centred on ideas and concepts, rather than technology. However, at Queen Mary you will benefit from both creative and technological input because we not only use creative processes, but also mathematical and scientific analyses.

Design graduates and those working in the digital creative world need to be artists, technologists and engineers, or at least, be able to understand how they may cross the divide.

These programmes combine design creativity and a knowledge of technology as an integral part of their structure.

# Degrees with Foundation Year

**Degrees with a Foundation Year provide students with alternative routes onto undergraduate programmes at Queen Mary. Whilst studying in your foundation year, you have access to all Queen Mary's facilities and will be a full-time student of the university.**

Our BEng Engineering with Foundation programme, and BSc/BEng Materials Science with Foundation programme, combine a foundation year with a traditional university degree in an integrated four-year programme. Successful completion of the Foundation year guarantees you a place on a relevant degree programme without having to re-apply through UCAS.

These programmes are open to home, EU and international students. UK foundation students are eligible to apply for funding through the Student Loan Company.

You have to successfully complete the foundation year at the appropriate level to be eligible for degree progression.

## **BEng Engineering (4 Year). UCAS code: HHX1**

Degree progression opportunities on the following programmes at Queen Mary: Aerospace Engineering BEng, Biomedical Engineering BEng, Chemical Engineering BEng, Mechanical Engineering BEng, Robotics Engineering BEng and Sustainable Energy Engineering BEng.

## **BSc/BEng Materials (4 Year). UCAS Code: JJX5**

Degree progression opportunities on the following programmes at Queen Mary: Materials Science and Engineering BEng.

Go to the foundation website to find out more about the programmes: [qmul.ac.uk/study/foundation-courses/](https://qmul.ac.uk/study/foundation-courses/)



The teaching is always up to date and encourages you to explore different career paths”

**Gioia Etchi Regoli**  
MEng Materials Science  
and Engineering (2018)





Queen Mary run workshops designed to increase success in job interviews and provide links to a range of engineering companies.”

**Jack Deville**

MEng Materials Science  
and Engineering (2020)

**You will have excellent career prospects with a degree from Queen Mary. Most of our graduates go on to work within the wide-ranging engineering industry: some are now designing racing cars, while others have become commercial airline pilots.**

**Preparing you for the future**

Queen Mary graduates are highly regarded by employers, and your standing among graduate recruiters is also enhanced by our membership of the Russell Group of leading universities.

Engineering graduates have one of the highest employability rates. Career paths are diverse and flexible across roles and sectors: in product design and manufacture, R&D, technology analysis, production or technical management; in education, medicine, manufacturing, consulting, and government regulatory bodies.

Organisations employing our recent graduates include:

- Jaguar Land Rover
- Crossrail
- BAE Systems Applied Intelligence
- Dow Chemical

**Careers information and guidance**

The Careers Team is dedicated to educating, advising and connecting Queen Mary students and recent graduates to employers. Our services include: one-to-one appointments for CV checking and mock interviews; tailored workshops; employer-led events; and recruitment support for internships part-time jobs and work placements. You will have access to a dedicated Careers Consultant with expert knowledge of recruitment and connections to employers in their field.

In the School Industrial engagement is fundamental to our teaching as well as our research. We have extensive links to industry which help us provide placements, shape the content of our programmes, respond to industry demand and offer networking opportunities. We host a biannual engineering Industrial Liaison Forum where our students interact with potential employers, industry representatives and alumni working in industry. We also have Industry Advisory Boards which facilitate the exchange of ideas between the board members from industry, the academic staff and the students in the School of Engineering and Materials Science.

**Industrial Experience**

The majority of our undergraduate programmes are available with an Industrial Experience option in which students take a relevant industrial placement for one year.

We have an Industrial Experience Manager in SEMS who supports students in locating a suitable placement. Placements are often very competitive, so it is important that students are pro-active in finding a suitable placement as they cannot be guaranteed.

During your placement you will continue to be a student at Queen Mary University of London with access to all university facilities. Each student is assigned an Industrial Experience Tutor who is available for academic support throughout their placement. Students are visited during their year in industry by the Industrial Placement Manager who will liaise with the employer and student regularly during the placement period.



**Industrial Links**

Industrial Partnership is core to our activities. We have an Industrial Advisory Board who number more than 40 members from companies such as Airbus, BAE, Jaguar Land Rover, Rolls-Royce, Ford, Schlumberger, GSK and DePuy. They deliver guest lectures, support projects, and provide work experience and graduate employment opportunities”

**Prof James Busfield**



At SEMS, there are often opportunities to go on industrial placements or abroad. I worked at ExxonMobil in Brussels as part of my industrial year abroad in 2014-2015, and that was an unforgettable and eye-opening experience”

**Michael Cheung**

Materials Science And Engineering with Industrial Experience 2016, Graduate Project Manager, Ove Arup & Partners.



Your year in industry will be assessed through:

- Written coursework
- Short oral presentation
- Employer feedback

**Benefits**

- Gain valuable work experience
- Strengthen your CV and increase employability
- Develop key skills in communication, problem solving and team working
- Counts towards the requirements of applying to be a chartered engineer
- Make professional contacts in a relevant industry
- Discover more about a potential career
- Give context to your academic studies
- Earn a salary

**Some of our industrial links**

- DePuy
- GSK
- Lucideon
- Rolls-Royce
- Airbus
- Microsoft
- GE Aviation
- GKN
- Mott McDonald
- Transport For London
- UK Atomic Energy Association
- Exxon Mobile
- Eaton Industries
- Siemens
- Jaguar Land Rover
- Caterpillar

**Graduate roles**

Our degree programmes have prepared students for work in a wide range of roles including:

- Materials Engineer
- Metallurgist
- Research Scientist
- Technical Engineer
- Biomedical Engineer
- Manufacturing Systems Engineer
- Patent Examiner
- Graduate Design Engineer
- Designer
- Graduate Trainee

Many of our students also move on to study, at either masters or PhD level.

# How will I study?

**Course structure**

We are currently undertaking a programme review, which will develop the modules we offer and improve your student experience. Programmes will focus on practical activities, case studies and design, build and test, to bring engineering concepts to life.

Your studies will integrate fundamental engineering principles such as fluid mechanics, design, materials and mathematics. You will learn how engineering theory is applied in real-life situations, and how to apply engineering principles to solve real-world problems.

We take great pride in our approach, which maximises flexibility and career prospects for our students by offering unified teaching of engineering concepts, whilst maintaining significant specialisation in all degree programmes right from the very start of the first year. We achieve this by ensuring our cohorts cover the same important engineering concepts together, but learn how to apply these to situations relevant to their engineering discipline. We also have stream specific modules from the first year to contextualise and develop engineering problem solving skills.

**Independent study**

For every hour spent at university you will be expected to complete additional independent study. This time could be spent preparing for formal study sessions, reading, assessing data from experiments, completing lab reports or revising for examinations.

The direction of your individual study will be guided by the formal study and practical sessions you attend, along with your reading and assignments.

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.

**Assessment**

Assessment typically includes a combination of coursework, written reports, projects, presentations, group work and exams taking place after the Christmas break and in the summer.

# Aerospace Engineering

## Our degree programmes

### Aerospace Engineering BEng (3 years)

UCAS code: H421

### Aerospace Engineering with a Year in Industry BEng (4 years)

UCAS code: H401

### Aerospace Engineering with a Year Abroad BEng (4 years)

UCAS code: H42Y

### Aerospace Engineering MEng (4 years)

UCAS code: H400

### Aerospace Engineering with a Year in Industry MEng (5 years)

UCAS code: HK00

### Aerospace Engineering with a Year Abroad MEng (5 years)

UCAS code: H40Y

**A-level:** MEng: AAA BEng: AAB. Must include maths and physics or chemistry. Excludes General Studies and Critical Thinking. Alternative offers may be made to applicants taking the EPQ.

**IB:** MEng: 36 overall with 665 in HL subjects BEng: 34 overall with 665 in HL subjects Must include HL maths and physics or chemistry.

**BTEC:** See [qmul.ac.uk/undergraduate/entry/btec](http://qmul.ac.uk/undergraduate/entry/btec) for detailed subject and grade requirements. Grade B in A-level maths is also needed.

Aerospace engineering is concerned with the design, construction and operation of aircraft, helicopters and spacecraft. The skills you will develop could be applied to the development of future spacecraft and highperformance aircraft and also to the next generation of 'green air and ground transport' (for example high-speed trains) as well as green energy, such as wind turbines.

The MEng includes an additional year of study that involves a group project undertaken in the fourth year. Recent examples of such projects include the design and construction of a rocket capable of breaking the UK altitude record and the design of a solar-powered racing car.

You will study a range of core engineering principles including: mathematics and computing, mechanics covering dynamics, statics, solids and fluids, thermodynamics, control systems and computer aided engineering.

As well as these core principles you will cover the following specialist topics:

- Aerodynamics including low and high speed analysis of flow and wing theory
- Aerothermodynamics including formation of shockwaves and high Reynolds number flows
- Stability and control of conventional fixed-wing aircraft

Optional Aerospace topics include:

- Design of an aerospace vehicle including sources of drag, key performance parameters and design of propulsion systems
- Design of a spacecraft including space environment, thrust spacecraft manoeuvres and low thrust trajectories

These Aerospace Engineering degree programmes are accredited by the Royal Aeronautical Society and the Institution of Mechanical Engineers, which means students can progress to chartered engineer status (CEng).

For further details see: [qmul.ac.uk/undergraduate/coursefinder/courses/2021/aerospace-engineering](http://qmul.ac.uk/undergraduate/coursefinder/courses/2021/aerospace-engineering)



I had the opportunity to do a 12 month placement at Airbus UK. I realised that what I was learning at university was not just to do an exam, I used at least something I had learnt at Queen Mary every day at work. I can confidently say that a Queen Mary degree in Aerospace Engineering prepares you well for a career in industry”

### Alba Espinosa Rastoll

BEng Aerospace Engineering with Industrial Experience (2018)

# Biomedical Engineering

## Our degree programmes

### Biomedical Engineering BEng (3 years)

UCAS code: HBF2

### Biomedical Engineering with a Year in Industry BEng (4 years)

UCAS code: HBF1

### Biomedical Engineering MEng (4 years)

UCAS code: HBF5

### Biomedical Engineering with a Year in Industry MEng (5 years)

UCAS code: HBF34

### Biomedical Engineering with a Year Abroad BEng (4 years)

UCAS code: HBFY

### Biomedical Engineering with a Year Abroad MEng (5 years)

UCAS code: HBFX

**A-level:** MEng: AAA, BEng: AAB

Must include maths and physics or chemistry. Excludes General Studies and Critical Thinking. Alternative offers may be made to applicants taking the EPQ.

**IB:** MEng: 36 overall with 665 in HL subjects  
BEng: 34 overall with 665 in HL subjects  
Must include HL maths and physics or chemistry.

**BTEC:** See [qmul.ac.uk/undergraduate/entry/btec](http://qmul.ac.uk/undergraduate/entry/btec) for detailed subject and grade requirements. Grade B in A-level maths is also needed.

Biomedical engineering brings technological innovation to the field of medicine and healthcare. It integrates professional engineering activities with medicine and the study of the human body. As a biomedical engineer, you will be at the forefront of medical advances that in the past have included hip replacements, medical imaging and life-support systems. You will study core engineering modules and specialist biomedical engineering options.

For your third-year individual research project, you will be integrated into our internationally leading research activities. The fourth-year MEng design projects are linked to industry and contain appropriate clinical input, with a focus on solving real biomedical engineering design problems.

You will study a range of core engineering principles including: mathematics and computing, mechanics covering dynamics,



statics, solids and fluids, control systems and computer aided engineering. As well as these core principles you will cover the following specialist topics:

- Anatomy and physiology in context including clinical scenarios, diagnostics, regenerative medicine and rehabilitation
- Fluid mechanics of the cardiovascular system including properties of blood, vascular network, heart anatomy and cardiac cycle
- Biomechanics including role, function and operation of nerves and muscles in the body, neuromuscular disorders and pathologies
- Medical devices including implant design and biocompatibility
- Cell biology, mechanics and clinical applications for tissue engineering and regenerative medicine

These Biomedical Engineering degree programmes are accredited by the Institution of Mechanical Engineers.

For further details see: [qmul.ac.uk/undergraduate/coursefinder/courses/2021/biomedical-engineering](http://qmul.ac.uk/undergraduate/coursefinder/courses/2021/biomedical-engineering)



The structure of the course and the method of delivering it made every component very interesting throughout the three years. This is especially because the course is taught by some of the best researchers in the country, who teach state of the art research rather than relying on textbooks”

**Hamzah Ezairjawi**

BEng Biomedical Engineering (2017)

# Chemical Engineering

## Our degree programmes

### Chemical Engineering BEng (3 years)

UCAS code: H812

### Chemical Engineering with a Year in Industry BEng (4 years)

UCAS code: H811

### Chemical Engineering with a Year Abroad BEng (4 years)

UCAS code: H81Y

### Chemical Engineering MEng (4 years)

UCAS code: H814

### Chemical Engineering with a Year in Industry MEng (5 years)

UCAS code: H813

### Chemical Engineering with a Year Abroad MEng (5 years)

UCAS code: H84Y

**A-level:** MEng: AAA, BEng: AAB

Must include maths and physics or chemistry. Excludes General Studies and Critical Thinking. Alternative offers may be made to applicants taking the EPQ.

**IB:** MEng: 36 overall with 665 in HL subjects  
BEng: 34 overall with 665 in HL subjects  
Must include HL maths and physics or chemistry.

**BTEC:** See [qmul.ac.uk/undergraduate/entry/btec](http://qmul.ac.uk/undergraduate/entry/btec) for detailed subject and grade requirements. Grade B in A-level maths is also needed.

Chemical engineers are in great demand and can have successful careers in a large number of industries. The programme provides an insight into basic chemistry, process engineering, and computational engineering. You will gain an understanding of how to alter the chemical, biochemical or physical state of a substance, used to create everything from personal care products, health care products, to advanced functional materials (e.g. smart coatings and energy materials).

In addition, you will learn about the engineering principles that the processing industry, from the food industry to the oil industry, uses to design largescale plants. A strength of our School is teaching and research on the manufacturing of small-scale, high-value chemicals and materials.



Student analysing chemicals in our facilities

You will study a range of core engineering principles including: mathematics and computing, mechanics of fluids, thermodynamics and control systems. As well as these core principles you will cover the following specialist topics:

- Chemistry relevant to engineering including atomic and molecular structure, molecular shape and chemical bonding
- Chemical reaction engineering including reaction rate kinetics, reactor types and design, complex multiple reactions and catalysts

- Industrial Chemistry including chemical process technology and hydrocarbon recovery methods
- Separation of mixtures including concepts of mass and heat transfer
- Distillation design
- Product and process design

For further details see: [qmul.ac.uk/undergraduate/coursefinder/courses/2021/chemical-engineering](http://qmul.ac.uk/undergraduate/coursefinder/courses/2021/chemical-engineering)

# Design, Innovation and Creative Engineering

## Our degree programmes

### Design, Innovation and Creative Engineering BEng (3years)

UCAS code: 4A33

### Design, Innovation and Creative Engineering with a Year Abroad BEng (4 years)

UCAS code: 4A3Y

### Design, Innovation and Creative Engineering MEng (4 years)

UCAS code: 4L71

### Design, Innovation and Creative Engineering with a Year Abroad MEng (5 years)

UCAS code: 4L7Y

#### A-level: MEng AAA, BEng: AAB

This must include A-Level Maths or Physics. If students do not have an additional A-level in a creative subject they should be able to demonstrate creativity by another method, for example as a GCSE or an activity outside school. Excludes General Studies and Critical Thinking.

**IB:** MEng: 36 overall with 665 in HL subjects  
BEng: 34 overall with 665 in HL subjects  
Must include maths or physics and a second science from maths, physics, chemistry and design technology.

**BTEC:** See [qmul.ac.uk/undergraduate/entry/btec](http://qmul.ac.uk/undergraduate/entry/btec) for detailed subject and grade requirements. Grade B in A-level maths is also needed.

This practical design programme allows you to develop strong creative design capabilities alongside scientific and engineering knowledge and skills. The degree is framed around the core 'Design Studio' modules that run throughout your programme. The Design Studio operates as tutorial-style sessions to encourage you to think and develop as an independent

designer. This process is supported by visiting professional designers.

You will study a range of core engineering principles including: mathematics, mechanics covering statics, computer aided design and control systems. As well as these core principles you will cover the following specialist topics:

- Studio based design study including design process
- Programming for arts applications
- Multimedia and the relation with human perception including online social networks
- Interactive objects including creating devices controlled by microcontrollers using sensors and actuators
- Key aspects of innovation, technological standards, dominant design and systems of innovation

Second year students apply their technical and design skills on a large 'Creative Group Project' based on research challenges. In the final year you will develop your own



Design, Innovation and Creative Engineering is a unique course. You're allowed to develop in your own way and engage in projects outside the curriculum. Visiting museums as part of the programme was brilliant because we can immerse ourselves in the world of design"

#### Hal Dubuisson and Mari Andersen

Design, Innovation and Creative Engineering (2019)



individual design project, supported by academics and visiting tutors. The group project where you work for a client in industry has generated several patent applications. All final-year projects are presented in the Queen Mary Design Show.

For further details see: [qmul.ac.uk/undergraduate/coursefinder/courses/2021/design-innovation-and-creative-engineering](http://qmul.ac.uk/undergraduate/coursefinder/courses/2021/design-innovation-and-creative-engineering)

# Materials Science and Engineering

## Our degree programmes

### Materials Science and Engineering BEng (3 years)

UCAS code: J511

### Materials Science and Engineering with a Year in Industry BEng (4 years)

UCAS code: JM11

### Materials Science and Engineering with a Year Abroad BEng (4 years)

UCAS code: J51Y

### Materials Science and Engineering MEng (4 years)

UCAS code: J512

### Materials Science and Engineering with a Year in Industry MEng (5 years)

UCAS code: JM10

### Materials Science and Engineering with a Year Abroad MEng (5 years)

UCAS code: J52Y

**A-level:** MEng: AAA, BEng: ABB

Must include two from maths, physics and chemistry. Excludes General Studies and Critical Thinking.

Alternative offers may be made to applicants taking the EPQ.

**IB:** MEng: 36 overall with 665 in HL subjects

BEng: 32 overall with 655 in HL subjects, including two from HL maths, physics and chemistry.

**BTEC:** See [qmul.ac.uk/undergraduate/entry/btec](http://qmul.ac.uk/undergraduate/entry/btec) for detailed subject and grade requirements.



I really enjoyed the student-centred learning module. The thought process involved in solving the tasks they set you is really engaging and extremely varied. One week I would be looking at characterisation techniques and the next I would be building a boat. I had a lot of fun with this module and developed a lot of other skills while doing it”

#### Jack Devile

MEng Materials Science and Engineering with Industrial Experience (2020)



Materials Science and Engineering programmes provide a thorough grounding in the physical and chemical structure of materials, the properties of materials, manufacturing processes and design. Academically, the programmes are a bridge between the pure and applied sciences. Vocationally, they provide a training that embraces the variety of skills in demand throughout industry and business. These programmes cover all materials: metals, ceramics, polymers and composites. Knowledge of these materials is essential if you wish to work in multidisciplinary engineering sectors, such as automotive or aerospace manufacture, where the optimisation of material selection is critical.

You will study a range of core materials science principles including: mechanical properties of matter, mathematics, physical and mechanical properties of polymers and metals, X-ray diffraction and analytical electron microscopy, chemical kinetics and thermodynamic in materials science and manufacturing.

As well as these core principles you will cover the following specialist topics:

- Engineering design including paper based drawing, 2D and 3D CAD Design and reverse engineering
- Role of composites in modern engineering including aerospace applications
- Material selection concepts including processing constraints in design
- Failure of material including influence of temperature on mechanical properties of material
- Physical properties of nanomaterials

For further details see: [qmul.ac.uk/undergraduate/coursefinder/courses/2021/materials-science-and-engineering](http://qmul.ac.uk/undergraduate/coursefinder/courses/2021/materials-science-and-engineering)

# Mechanical Engineering

## Our degree programmes

### Mechanical Engineering BEng (3 years)

UCAS code: H300

### Mechanical Engineering with a Year in Industry BEng (4 years)

UCAS code: H304

### Mechanical Engineering with a Year Abroad BEng (4 years)

UCAS code: H30Y

### Mechanical Engineering MEng (4 years)

UCAS code: H301

### Mechanical Engineering with a Year in Industry MEng (5 years)

UCAS code: H302

### Mechanical Engineering with a Year Abroad MEng (5 years)

UCAS code: H31Y

**A-level:** MEng: AAA, BEng: AAB

Must include maths and physics or chemistry. Excludes General Studies and Critical Thinking. Alternative offers may be made to applicants taking the EPQ.

**IB:** MEng: 36 overall with 665 in HL subjects  
BEng: 34 overall with 665 in HL subjects  
Must include HL maths and physics or chemistry.

**BTEC:** See [qmul.ac.uk/undergraduate/entry/btec](https://qmul.ac.uk/undergraduate/entry/btec) for detailed subject and grade requirements. Grade B in A-level maths is also needed.

This Mechanical Engineering programme shows you not only how parts, machines and systems work, but also how to design and analyse them. These systems could be a power station, a car engine, or even a household object – the emphasis is on energy and design. You will start with specialist modules from the first year, while gaining a solid foundation in engineering by studying core engineering modules. In the 3rd year you will choose modules from a broad range of Mechanical Engineering course options.

Mechanical Engineering represents an ideal solid undergraduate degree programme from which students can then choose to specialise at postgraduate level. You will study a range of core engineering principles including: mathematics and computing, mechanics covering dynamics, statics, solids and fluids, thermodynamics, control systems and computer aided engineering. As well as these core principles you will cover the following specialist topics:

- Energy generation and the application to an integrated engineering system
- Heat transfer covering a variety of systems including conduction, convection and radiation and combinations thereof
- Analysis of motor function and efficiency including transducer selection for control systems

Optional mechanical engineering topics include:

- Combustions in automotive engine including operation of spark and compression ignition engines and energy and fuels
- Mechanics of impact relating to vehicular crashworthiness



What I enjoy the most about my course is that I can apply the theory I learn to real-life scenarios. I've always loved physics and maths, and mechanical engineering is the most applicable combination of the subjects”

**Anesu Nyamutora**

MEng Mechanical Engineering (2019)



These Mechanical Engineering degree programmes are accredited by the Institution of Mechanical Engineers, which means students can progress to chartered engineer status (CEng).

For further details see: [qmul.ac.uk/undergraduate/coursefinder/courses/2021/mechanical-engineering](https://qmul.ac.uk/undergraduate/coursefinder/courses/2021/mechanical-engineering)

# Robotics Engineering

## Our degree programmes

### Robotics Engineering BEng (3 years)

UCAS code: H67A

### Robotics Engineering with a Year in Industry BEng (4 years)

UCAS code: H673

### Robotics Engineering with a Year Abroad BEng (4 years)

UCAS code: H67Y

### Robotics Engineering MEng (4 years)

UCAS code: H67B

### Robotics Engineering with a Year in Industry MEng (5 years)

UCAS code: H67C

### Robotics Engineering with a Year Abroad MEng (5 years)

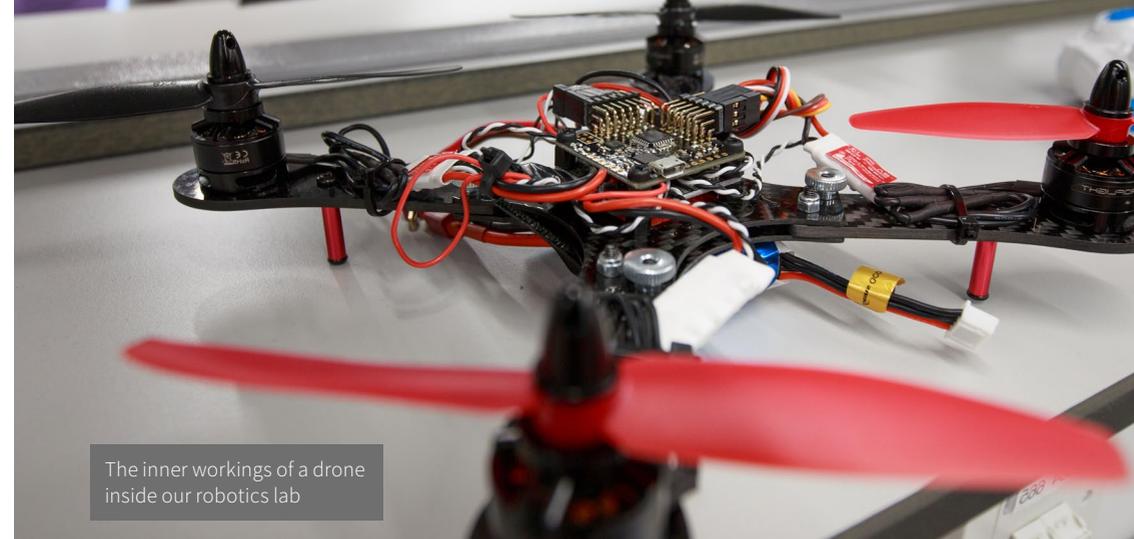
UCAS code: H67X

### A-level: MEng: AAA, BEng: AAB

Must include maths and a second science subject at A-level, preferably Physics, Electronics, Chemistry or Computing. Excludes General Studies and Critical Thinking. Alternative offers may be made to applicants taking the EPQ.

**IB:** MEng: 36 overall with 665 in HL subjects  
BEng: 34 overall with 665 in HL subjects including maths and physics or chemistry.

**BTEC:** See [qmul.ac.uk/undergraduate/entry/btec](http://qmul.ac.uk/undergraduate/entry/btec) for detailed subject and grade requirements. Grade B in A-level maths is also needed.



The inner workings of a drone inside our robotics lab

Our Robotics Engineering programme draws on the strengths of both the Schools of Electronic Engineering and Computer Science and Engineering and Materials Science. The two Schools have combined their state-of-the-art teaching facilities and internationally leading research to offer a programme designed to cover a wide range of general and specialised topics in the field of robotics. The programme will give you an in-depth knowledge of robotics engineering, associated technical know-how, hands-on experience, and numerous transferable skills. The opportunity to engage with industry will give you confidence to seek work in various industrial environments. It is expected that by the end of the programme through the 'Skills for Robotics' modules, your individual project in year 3, group project in year 4, and other associated courses, you will be able to design, model and build robots on your own, focusing on a particular application.

You will study a range of core engineering principles including: mathematics and computing, mechanics covering dynamics and statics, control systems and computer aided engineering. As well as these core principles you will cover the following specialist topics:

- Programming including Java and C Programming
- Electronic systems including electronic devices, components, circuits and simple systems
- Robotics systems including role of artificial intelligence, hardware and software components, dynamic robot manipulation and vision and medical robots
- Signal fundamentals such as discrete versus continuous time signals; signal average, energy and power; orthogonality; Fourier Series
- Structure, applications and programming of microcontroller and similar devices

For further details see: [qmul.ac.uk/undergraduate/coursefinder/courses/2021/robotics-engineering](http://qmul.ac.uk/undergraduate/coursefinder/courses/2021/robotics-engineering)

# Sustainable Energy Engineering

## Our degree programmes

### Sustainable Energy Engineering BEng (3 years)

UCAS code: H221

### Sustainable Energy Engineering with a Year in Industry BEng (4 years)

UCAS code: HF21

### Sustainable Energy Engineering with a Year Abroad BEng (4 years)

UCAS code: H22Y

### Sustainable Energy Engineering MEng (4 years)

UCAS code: H224

### Sustainable Energy Engineering with a Year in Industry MEng (5 years)

UCAS code: HG21

### Sustainable Energy Engineering with a Year Abroad MEng (5 years)

UCAS code: H24Y

**A-level:** MEng: AAA, BEng: AAB

Must include maths and physics or chemistry. Excludes General Studies and Critical Thinking. Alternative offers may be made to applicants taking the EPQ.

**IB:** MEng: 36 overall with 665 in HL subjects  
BEng: 34 overall with 665 in HL subjects  
Must include HL maths and physics or chemistry.

**BTEC:** See [qmul.ac.uk/undergraduate/entry/btec](https://qmul.ac.uk/undergraduate/entry/btec) for detailed subject and grade requirements. Grade B in A-level maths is also needed.

The projected increase in global energy demand, led by developing and emerging economies, underscores the need for new supplies of affordable sustainable energy. This future energy need is perhaps the greatest single challenge facing the world in the twenty-first century. The programme will concentrate on training students for employment in the energy sector. You may go on to work as an engineer, advising on sustainability issues for an energy company or for government.

You will study a range of core engineering principles including: mathematics and computing, mechanics covering dynamics, statics, solids and fluids, thermodynamics,



control systems and computer aided engineering. As well as these core principles you will cover the following specialist topics:

- Energy generation and the application to an integrated engineering system
- Heat transfer covering a variety of systems including conduction, convection and radiation and combinations thereof
- Analysis of motor function and efficiency including transducer selection for control systems
- Environmental engineering including impacts that pollution and engineering

works can have upon the environment, e.g. air quality, water quality, waste disposal, noise and vibration, transportation

- Environmental properties of materials including recycling schemes and life cycle analysis

These Sustainable Energy Engineering degree programmes are accredited by the Institution of Mechanical Engineers.

For further details see: [qmul.ac.uk/undergraduate/coursefinder/courses/2021/sustainable-energy-engineering](https://qmul.ac.uk/undergraduate/coursefinder/courses/2021/sustainable-energy-engineering)

# Laboratories and facilities



I was impressed with the range of analytical equipment we used during first year and was made even happier when we were able to use the equipment for our coursework”

## Jack Devile

Materials Science and Engineering (2020)

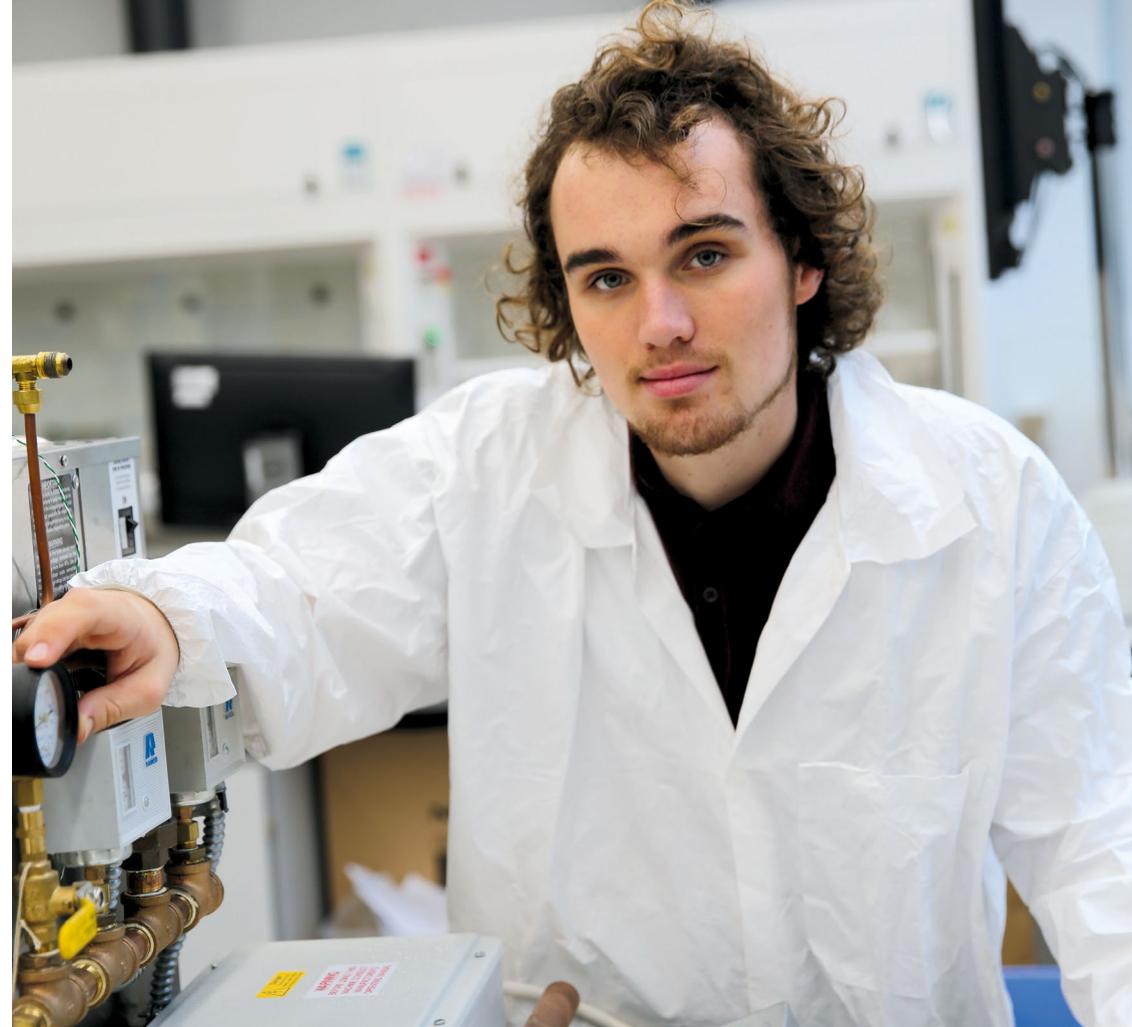
We have outstanding research and teaching facilities here at Queen Mary.

The School of Engineering and Materials Science have recently invested over £30 million into modernising our laboratory facilities across all disciplines in the School, this includes refurbishment of our existing labs as well as building additional laboratories and student spaces.

### The new facilities include:

- Our flagship multipurpose teaching and research lab G27, a three-storey high 250sq metre space designed for group work
- A Wet Chemistry Laboratory, teaching space equipped with fume cupboards and analytical equipment
- Refurbished Design Studio is a creative space where students receive tutorials, share ideas, collaborate on projects or work on their own

- A student maker space containing all the facilities one might need to prototype and build amazing projects. The maker space features: bench areas, machine tools, craft tools, 3D printers, spray booths etc.
- Robotics Laboratory equipped with robotics-arms, mobile platforms, mechatronic and control systems, swarm robots, human-like robotic systems, virtual reality and haptic interfaces, human motion tracking system
- The Human Performance Laboratory that has a wide range of equipment available including a force plate in the ground, a treadmill that can accommodate wheelchairs and motion analysis facilities, allowing us to analyse motion and forces in people during walking, running and many other activities.
- Renovated Internal Combustion Laboratory focusing on engine performance testing and emissions. The Lab is equipped with 2 engine test beds allowing calculation of the thermodynamics and mechanical efficiency of the engines.



- Refurbished Aerospace Laboratory equipped with a state of the art flight simulator with a cockpit, fully moving-base platform and virtual vision simulation for a range of visual cueing systems. We also have a large number of wind tunnels which are being used for teaching, undergraduate projects and research activities

Most of our programmes offer final year students the opportunity to carry out a research project, which is a great opportunity to develop research skills. You will be fully supported by a member of staff and will carry out research using the same laboratories as academic researchers.

# Living in London

**As one of the world's most exciting and culturally rich cities, London is a great place to be a student: you'll never run out of things to see and explore.**

London is also a global hub at the centre of professional, cultural, government and academic networks: a great place to kick start your career.

With nearly 400,000 students here, it's a fantastic place to study. There's always something going on, including hundreds of free events every week. Your student card will also give you a reduction on a surprising number of events and services, including transport.

- Over 300 museums and galleries
- One of the greenest cities on earth
- Multicultural cuisine
- Exceptional music and nightlife
- Outstanding markets

Find out more: [qmul.ac.uk/studentlife/social/london](https://qmul.ac.uk/studentlife/social/london)

“

What attracted me here in the first place was that London is an international city where career opportunities are always knocking on your door. It's diverse and because of this, I have been immersed in so many different types of cultures and exposed to different ways of living”

**Anesu Nyamutora**

BEng Mechanical Engineering (2019)



# Student life

## Queen Mary Students' Union (QMSU)

All Queen Mary students automatically become a member of QMSU, an active and flourishing Students' Union run by students for students. QMSU is best known for its clubs and societies, which provide a great opportunity for meeting people - especially those who are studying a different subject to you. One of the aims of QMSU is to ensure that your time at university is not just about work, but also includes socialising and personal development.

## QMotion

QMotion is Queen Mary's Health and Fitness centre. Equipped with a great range of exercise machines and weights, there is also a women only area and a number of exercise classes. There is a squash court and sports hall on campus, and a swimming pool a short distance away.

## Sports

Playing sports is a good way to relax after a day spent studying. Our sports teams regularly compete against other college teams, and there's a great social scene with after-match drinks and a regular social night, Hail Mary, which is hosted by a different SU sports team each month.

## QMSU Volunteering

Volunteering with charities and non-profit organisations is a brilliant way to explore what London has to offer, make a difference and really get involved in your local area. You can do anything from mentoring local school students, to volunteering in local hospitals, to becoming a helpline volunteer and managing a local sports team. See: [qmsu.org/volunteering/](https://qmsu.org/volunteering/)

## Student support

You will be assigned an academic adviser when you begin your time at Queen Mary who will stay with you throughout your studies. Your adviser will help you choose modules, sign any forms you need and help you with any academic or personal problems that you have. Most students find it extremely helpful to have one adviser on hand throughout their time at Queen Mary.



The Queen Mary Formula Student Society competing at the Formula Student competition at Silverstone

## Health services

The Student Health Service provides a complete range of medical services including immunisations, sexual health advice and psychological counselling. Students living in Queen Mary accommodation at Mile End or Whitechapel and students living in the borough of Tower Hamlets (postcodes E1, E2, E3 and E14) are encouraged to register with the Student Health Service. For more information see: [studenthealth.qmul.ac.uk/health-services](https://studenthealth.qmul.ac.uk/health-services)

## Advice and counselling

Our advice service offers in-depth and specialist advice on a range of financial, practical and legal issues such as student finance, housing rights, immigration law and international student issues. Counselling is also available. Our Advice and Counselling service is a completely free and confidential service. For more information see: [welfare.qmul.ac.uk](https://welfare.qmul.ac.uk)

# Applying and funding

For undergraduate programmes, all students, including international and mature students, must apply online through the Universities and Colleges Admissions Services (UCAS): **ucas.com**

You can find further details on the application process on the UCAS website in the 'Applying online guide'. Our own step-by-step guide to applying can be found at: **qmul.ac.uk/undergraduate/apply** UCAS will start receiving applications from mid-September for entry in the following autumn.

Applications from UK-based applicants should reach UCAS by 15 January. Later deadlines apply to international applicants but early application is recommended.

**The institution code for Queen Mary is Q50.**

## Tuition fees

There are different tuition fees for our undergraduate courses. What you pay depends on whether you come from the UK, the EU or the rest of the world.

Like many universities in England, Queen Mary's annual tuition fee for full-time UK students is £9,250.

For 2021 entry EU students with pre-settled or settled status in the UK will be eligible for Home fees and student support, as long as they meet the relevant residence requirements. For more information see: **qmul.ac.uk/undergraduate/apply/policies/feestatus/**

Tuition may increase depending on inflation and government policy. For more information see: **qmul.ac.uk/undergraduate/feesandfunding/tuitionfees**



Students enjoying our campus

## Supporting you

While everyone's situation is different, there are many opportunities at Queen Mary to get financial support and advice to help make sure that you're ready to start your university life.

Some of our awards are income-assessed, while others are awarded on the basis of achievement.

## What funding is available?

### Scholarships

Queen Mary scholarships are awarded on academic achievement. Some are issued automatically and others you need to apply for (deadlines are online). The value of our scholarships vary. Like bursaries, scholarships do not need to be repaid. Our scholarship awards are funded by Queen Mary and, in some cases, external stakeholders, including our graduates and partner organisations. For more information on scholarships, visit

**qmul.ac.uk/scholarships**

## Bursaries

Queen Mary University of London Bursaries are for UK-based students. They are awarded automatically – you don't need to apply and they do not need to be repaid. If you have had an income assessment as part of your Student Finance application (and your household income is less than £35,000), you will receive a bursary.

For students starting their studies in 2020, our bursary rates were:

- £1,700 per year with a household income of £20,000 or less
- £1,000 per year with a household income of between £20,000 and £35,000

## Financial advice

We offer specialist support on all financial and welfare issues through our Advice and Counselling Service, which you can access as soon as you have applied for a place at Queen Mary. For more information, visit the Advice and Counselling service website **welfare.qmul.ac.uk**

Students by Regent's Canal  
opposite our Mile End campus.

# Accommodation

**Queen Mary has one of the largest residential campuses in London at Mile End, only 15 minutes by tube to Oxford Street, Covent Garden and the West End. Living on campus is fun, safe and convenient – not to mention a great way to experience London's vibrant East End.**

All of our accommodation is in self-catered houses, flats and maisonettes. Most of our students can apply for accommodation in our Student Village on our Mile End campus. To find out more visit: [qmul.ac.uk/accommodation](https://qmul.ac.uk/accommodation)

## Living off campus

Renting private accommodation off-campus is a popular choice for many students. The vast majority of second and third-year students - and even some first-years - prefer the independent lifestyle offered by sharing flats or houses with friends. We provide a range of advice and information to help you to find a convenient and affordable place to stay, including an online listing of privately owned accommodation available for rent.

Much of this accommodation is in east or north-east London, within easy walking or commuting distance of Mile End.

## Applying for our accommodation

We guarantee accommodation to all first year undergraduate and foundation students. Find out more about eligibility: [qmul.ac.uk/accommodation](https://qmul.ac.uk/accommodation) Queen Mary housing is very popular and we suggest you apply as early as possible. For housing deadlines and eligibility, visit: [residences.qmul.ac.uk/college/application](https://residences.qmul.ac.uk/college/application)

## Alternative housing options

We can provide specialist advice on a range of alternative housing including: renting a local room or flat, a room in a privately built hall of residence or choosing a homestay or short-stay option (which provides greater flexibility).

For further information, guidance and prices, visit: [residences.qmul.ac.uk/alternative](https://residences.qmul.ac.uk/alternative)

For all accommodation queries, contact us on: Tel: +44 (0)20 7882 6474 email: [residences@qmul.ac.uk](mailto:residences@qmul.ac.uk)



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