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If you have any questions about courses, applications or student life at Bristol, please contact the Enquiries Team.

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Engineering Mathematics



Undergraduate study



Courses

Single Honours

BEng Engineering Mathematics
three years G162

MEng Engineering Mathematics
four years G161

**MEng Engineering Mathematics
with Study Abroad**
four years G160

**MEng Engineering Mathematics
with a Year in Industry[†]**
five years

[†] Entry by transfer after two years from G161, subject to eligibility criteria.

This leaflet contains information for students planning to start university in autumn 2020. We have made every effort to ensure all details are correct at the time of going to press (May 2019). However, since this information is subject to change, you are advised to check the University's website, bristol.ac.uk/ug-study, for the latest updates.

Why study engineering mathematics at Bristol?

Engineering mathematics is the art of applying mathematics and technical engineering principles to complex, real-world problems, ranging from robotics, space systems and social media to medicine, sustainability and environmental modelling.

Our engineering mathematics courses meet the increasing demand from industry for mathematically skilled engineers who can drive high-tech innovation. These skills can only be learned from hands-on experience and so we teach using case studies taken from a wide range of engineering, scientific, industrial and business applications.

The Faculty of Engineering is home to world-class facilities. Our pioneering research means that you will learn about the latest mathematical techniques at the heart of modern engineering from internationally recognised experts. Our curriculum offers a diverse range of mathematical topics such as nonlinear dynamics and artificial intelligence, which are beyond the scope of conventional mathematics degree courses.

During your degree you will gain many important transferable skills, including teamwork, report writing, giving presentations and problem solving. These skills are highly valued by employers and are often central to career success. We have a superb graduate employment record and our students go on to have successful careers in a wide range of exciting industries.

Our continuing investment in facilities forms part of the exceptional student experience at Bristol. The Engineering Growth Project has recently invested £14 million to equip the Faculty of Engineering for the next generation of research, practice and innovation. This major expansion of our facilities includes state-of-the-art equipment and large, flexible teaching, design, study and workshop spaces, which enable interactive teaching and learning. Our new atrium acts as a social learning and meeting place, with a new café and bookable project and study rooms.

'I really enjoy the course. I wasn't sure what to study at university, but engineering mathematics involves everything I could want, combining programming, mathematics and physics to solve real-world problems with mathematical models.'

Laura (MEng Engineering Mathematics with Study Abroad)

What will you study?

Engineering mathematics is built on four core themes that cover theoretical and practical aspects of the application of mathematics, together with a wide range of options.

Mathematical and data modelling

This is the unique selling point of all our engineering mathematics degrees. Students apply their skills to create mathematical models and analyse complex datasets while solving real problems from research, industry and business. The aim of this theme is to prepare you for work at the highest level in the most challenging and rewarding careers in engineering, mathematics and science.

Mathematics

Core mathematics is an inherent part of our engineering mathematics courses. The types of mathematics you will study are incredibly varied, from decision mathematics to mechanics and artificial intelligence to chaos theory. You will be learning new mathematics, but you will also understand why you need it to solve real problems.

Recent final-year projects have used engineering maths to detect ocean pollution, design nanoparticles that target cancerous cells, and suppress flutter in aerofoils.

Engineering

You will gain an excellent background in general engineering so that you can really engage with the practical problems you will work on. You will have the chance to take units from across the Faculty of Engineering, studying topics such as fluids, space systems, robotics, cryptography and sustainability.

Scientific computing

Computing is crucial for applying mathematics in the real world. Most problems at the cutting edge of science and engineering do not result in equations with nice analytical solutions. In these cases, you need to use computers to find approximate numerical solutions, so we teach computer programming to complement your mathematical modelling skills. Don't worry if you have never done any computer programming; we will teach you everything you need to know from scratch.

Options

Flexibility is a key feature of our degree courses. In later years, you will be able to tailor your degree with a wide choice of options from across the University.

Unit example – Mathematical and Data Modelling*

Mathematical modelling is crucial to our understanding of the real world. Through formal mathematical methods, we can capture the essence of interactions as complex and varied as those in biological, physical, chemical and social systems.

Mathematical modelling is a core stream that runs through the degree, in which you must use your mathematical skills to investigate real-world problems posed by guest experts from a wide variety of fields. Working in small teams, you will develop your abilities to interact and communicate with teammates, to learn to think outside normal convention, and to be creative with mathematics. The problems are extremely varied and exciting and have included modelling disease epidemics, profiling internet users by their behaviours, developing ultrasound location systems for autonomous machines, and maximising the efficiency of energy harvesting systems. No two projects are the same, and their variety and challenging, open-ended

nature prepares you for professional life after graduation. This unit is assessed through a combination of technical reports, presentations and peer review feedback.

*It is possible that units for future academic years may change, for example due to staff changes or developments in the field. Please see bristol.ac.uk/ug20-engmaths for the most up-to-date information.



'The small cohort means you get to know everyone really well, and you can go to lecturers and ask questions. I like that I can take units from other courses outside engineering.'

Rachel (MEng Engineering Mathematics)

Careers and graduate destinations

From designing next-generation Formula One cars and space systems, to biomedicine and the development of renewable energy technologies, our graduates go on to a wide range of careers. Bristol graduates' unique mixture of computational, technical, problem-solving and teamwork skills is valued highly by employers, and they find rewarding and exciting careers.

As well as the support offered by the University Careers Service, our engineering students benefit from a dedicated Industrial Liaison Office, which develops engineering-specific industrial links for students. Its work includes running special internship and mentoring schemes for engineering students, organising industry-specific 'Inside Track' lectures, and establishing industrial scholarships, prizes and projects.

Our many connections with industry mean that our courses are professionally relevant, and we are well-placed to recommend the best graduate employers. Recent examples include Airbus, Arup, Atkins, Auracell, BAE Systems, DCA Design, Deutsche Bank, EY, Garrad Hassan, Logica, Motorola, OC Robotics, PricewaterhouseCoopers, Red Bull Racing, Renishaw, Stirling Dynamics, Sun Microsystems, SunTech Medical, Swarm Systems and Transport for London.

Bristol is the second most targeted university by top UK employers.

High Fliers Research 2019



Graduate employers

Miminal
Deutsche Bank
Accenture
Barclays
Atkins



Career destinations

Business Analyst
Data Scientist
Corporate Banker
Graduate Engineer
Graduate Transport Planner

Source: Destinations of Leavers from Higher Education survey 2016/17. Find out more at bristol.ac.uk/careers/be-inspired.

Making your application

Visit bristol.ac.uk/ug20-engmaths for more information about our courses.

Typical offer for BEng/MEng Engineering Mathematics

A-levels AAA including Mathematics **or** A*AB (contextual ABB) including A in Mathematics.

IB Diploma 36 points overall (contextual 32) with 18 at Higher Level (contextual 16), including 6 at Higher Level in Mathematics.

Our contextual offer is a grade reduction of up to two grades below the standard entry requirements, made to applicants from under-represented groups. Find out more at bristol.ac.uk/contextual-offers.

GCSEs No specific subjects required.

Selection process UCAS.

For other accepted qualifications, and for our English language requirements, visit bristol.ac.uk/ug20-engmaths.

Application advice for engineering mathematics courses

We consider each applicant's personal statement and reference. Evidence of potential to successfully complete the course may include:

- your interest in and commitment to mathematics and engineering;
- strong mathematical, analytical and technical skills;
- relevant reading, research or experience beyond your current syllabus;

- the suitability of the course for your interests and aspirations;
- non-academic achievement, work experience, positions of responsibility or teamwork;
- standard of written English.

It is possible to gain sponsorship for your studies; instead of direct sponsorship many employers are now using the 'Year in Industry' scheme as a route to finding future employees. More information is available at: www.etrust.org.uk/the-year-in-industry.

Further information

Find out more about the Department of Engineering Mathematics: bristol.ac.uk/engmaths.

We also have a blog: engmaths.org.

This information is correct at the time of printing (May 2019), but we recommend you check the University website for the latest information: bristol.ac.uk/ug20-engmaths.



Read more about how we support you when you are here:

bristol.ac.uk/students