

H100:General Engineering



UndergraduateMEng2022

Essentials

Please note: 2022-23 courses may be affected by Covid-19 and are therefore subject to change due to the ongoing impact of Covid-19. Applicants will be informed of any changes which we are required to make to course entries as a result of Covid-19.

UCAS code	H100
Degree	MEng
Professional accreditation	This programme is accredited on behalf of the Engineering Council for the purposes of fully meeting the academic requirement for registration as a Chartered Engineer. Individual discipline pathways are accredited by the appropriate Professional Engineering Institution.
Mode of study	Full Time
Duration	4 years
Location	Durham City (www.durham.ac.uk/study/location/durham.city)
A-Level	A*AA
BTEC	D*DD
International Baccalaureate	38
Alternative qualifications	<ul style="list-style-type: none"> • Other UK qualifications (www.dur.ac.uk/resources/study/UK.pdf) • EU qualifications (www.dur.ac.uk/resources/study/EU.pdf) • International qualifications (www.dur.ac.uk/international/country.information/)
Contextual Offers	You may be eligible for an offer which is one or two grades lower than our standard entry requirements. Find out more (www.durham.ac.uk/study/ug/apply/contextualoffers/).
More information	Still have questions? (www.durham.ac.uk/study/askus/)
Department(s) Website	www.durham.ac.uk/engineering

Course Summary

Description

The MEng Engineering degree is a four-year first degree that delivers the breadth and depth that you will need in the world of engineering. It is designed to produce graduates who will go on and lead engineering teams. Your first two years offer you a broad-based engineering education. You are then able to specialise in your third and fourth years.

At Durham in each year of your degree you will take six modules, the year is divided into three terms and there are examinations at the end of each year.

Year 1

You will study four modules in engineering, one in mathematics and one optional module. In your engineering modules, you will receive instruction in the use of 3D Computer Aided Design (CAD) software (e.g. SolidWorks), be taught how to implement engineering algorithms into computer code (specifically in C and MATLAB) and take part in a number of practical labs. You will also take part in a group design activity where you have to design, build and test a device to solve specific engineering challenge. Recent examples include miniature hydroelectric generators and chain-climbing robots. On the course, you also attend lectures, problem classes and supervisions with academic staff.

Compulsory modules:

- Solid Mechanics and Structures 1
- Electronic and Electrical Systems 1
- Thermodynamics and Fluid Mechanics 1
- Engineering Practice 1
- Mathematics for Engineers and Scientists

And one free elective.

The optional (free elective) module may be selected from anything that will fit the timetable and for which you meet the necessary prerequisites. Popular choices in the past have included 'Introduction to Programming', 'Computational Thinking' and a range of different language modules, but some students have taken modules in History or Poetry.

Year 2

Engineering and mathematics now occupy the full six modules in the timetable.

You will undertake a major design project as part of a small team with guidance from an academic supervisor and an 'Industrial Tutor' (an engineer from industry). This lets you put into practice the skills and knowledge that you have developed in your lectures. The end result is a detailed design report and a series of CAD drawings good enough to manufacture a device from.

Compulsory modules:

- Engineering Mathematics 2
- Thermodynamics and Fluid Mechanics 2
- Solid Mechanics and Structures 2
- Electrical Engineering 2
- Electronics 2
- Engineering Design 2.

Year 3

In the third year of the degree the course splits into the following streams: Civil, Electrical, Electronic and Mechanical Engineering.

A major team design project now occupies a whole module of the course where you consider the device as a product and do everything from basic market research to design for manufacture. For the Civil stream you will undertake a major design project supervised by practising civil engineers (plus an academic supervisor), which will allow you to develop new skills and knowledge in various areas, from bridge design to geotechnical structures. Practical skills, in addition to the weekly laboratory sessions, cover topics from land surveying to industrial problem solving with interaction with local industry, depending on the selected stream.

The modules for each stream comprise:

Electrical Engineering Route**Compulsory modules:**

- Electrical Engineering 3
- Power Semiconductor Devices 3
- Electronics and Communications 3
- Control and Signal Processing 3
- Thermodynamics and Fluid Mechanics 3
- Engineering Design 3.

Electronic Engineering**Compulsory modules:**

- Electrical Engineering 3
- Engineering Design 3
- Control and Signal Processing 3
- Electronics and Communications 3
- Digital Electronics and Digital Signal Processing 3
- Semiconductor Physics and Devices 3.

Mechanical and Electrical Engineering

Compulsory modules:

- Materials 3
- Solid Mechanics 3
- Thermodynamics and Fluid Mechanics 3
- Electrical Engineering 3
- Engineering Design 3
- Control and Signal Processing 3.

Civil Engineering**Compulsory modules:**

- Structures and Geomatics 3
- Geotechnics 3
- Environmental Engineering 3
- Civil Design 3
- Materials 3
- Solid Mechanics 3.

In line with our integrated approach to engineering many of the modules taken in the third year are found in more than one stream.

Year 4

The highlight of the degree for many of our students is the final year project. This activity, which is half the year in most streams, involves working closely with an academic supervisor on an area of cutting-edge research and development. The best student projects have been featured in internationally recognised engineering journals, indicating that our students are amongst the finest young engineers in the world. In addition to this, you will take modules on advanced engineering topics.

The five final-year streams are Civil Engineering, Mechanical Engineering, Aeronautics, Electronic Engineering, and New and Renewable Energy. The modules for each stream are shown below, you will typically study six taught modules and the balance of work is project-based. Students on most streams can usually choose their sixth module from a list of options.

Aeronautical**Compulsory modules:**

- MEng Research and Development Project (or MEng Technical Project and Engineering into Schools)
- Non-Linear Solid Mechanics 4
- Aircraft Structures 4
- Aeromechanics 4
- Fluid Mechanics 4
- Turbomachinery and Propulsion 4.

Civil Engineering

Compulsory modules:

- MEng Research and Development Project (or MEng Technical Project and Engineering into Schools)
- Advanced Geotechnical Engineering 4
- Planning and Contract Law 4
- Structural Design 4
- Structures 4
- Hydrology and Water Resources 4.

Electrical Engineering

Compulsory modules:

- MEng Research and Development Project (or MEng Technical Project and Engineering into Schools)
- Renewable Energy Technologies 4
- Future Vehicles 4
- Electrical Energy Conversion 4
- Power Electronics 4
- Smart Energy Networks 4.

Electronic Engineering

Compulsory modules:

- MEng Research and Development Project (or MEng Technical Project and Engineering into Schools)
- Radio and Digital Communications 4
- Communications Networks 4
- Advanced Electronics Measurement 4
- Advanced Electronics 4
- Photonics 4.

Mechanical Engineering

Compulsory modules:

- MEng Research and Development Project (or MEng Technical Project and Engineering into Schools)
- Fluid Mechanics 4
- Turbomachinery and Propulsion 4
- Renewable Energy Technologies 4
- Future Vehicles 4
- Non-Linear Solid Mechanics 4.

Renewable Energy

Compulsory modules:

- MEng Research and Development Project (or MEng Technical Project and Engineering into Schools)
- Renewable Energy Technologies 4
- Future Vehicles 4
- Electrical Energy Conversion 4
- Smart Energy Networks 4
- Decarbonisation of Heating and Cooling 4.

Study Abroad

Engineering is an increasingly international discipline and living and working in another country is a valuable addition to your CV. For this reason, students are encouraged to apply during their degree for a year-long placement with one of the Engineering Department's or the University's international partners, as an additional year of study. Students may study in English at some of the partner universities, whereas at others foreign language skills are essential. Students are fully supported by the Department both during the application process and during the year abroad. Language tuition is available in the first year in a range of languages as free elective modules and in other years through the University's Languages For All scheme.

Placement Year/Year in Industry

Practical engineering experience is invaluable and to recognise this you can choose to take a year-long placement in industry between your second and third year. The Department will assist in finding placement opportunities for you through the Industrial Partnership Committee (IPC) which consists of local, national and multi-national companies, including: British Airways, BP, IBM and Caterpillar, amongst many others.

Placement Year

You may be able to take a work placement. Find out more (www.durham.ac.uk/placements/).

Course Learning and Teaching

The course is mainly delivered through a mixture of lectures, problem classes, practical and design activities. Typically lectures provide key information on a particular field of study and identify the main underpinning engineering concepts in that area. Problem classes then provide opportunities for smaller groups to work through practical examples, based on the knowledge that you have gained through your lectures and through independent study outside the degrees formal contact hours. Finally, practical classes allow you to gain direct experience of practical and interpretative skills through laboratory classes, design activities and a Professional Engineering Applications Course (PEAC).

The balance of these types of activities changes as you develop your knowledge and your ability as an independent learner. This is one of the key attributes that you will develop (thereby preparing you for work or further study once you have completed the course). In the first two years, you will typically attend 12 hours a week of lectures (two hours per module) and have three hours of practical classes or design activities each week plus problem classes and small group supervision. In the first year there is a one-week full-time compulsory PEAC course and at the end of the second year there is a two-week full-time practical course. Outside timetabled contact hours, you are also expected to undertake your own independent study to prepare for your classes and broaden your subject knowledge.

The balance starts to shift in the third year, as you develop your abilities as an independent learner. Lectures still play an important role in supporting you in developing your knowledge and skills, with an average of 10 hours a week. The frequency of laboratory practical sessions and design activities remains similar, but the tasks become more open-ended.

This move towards greater emphasis on independent learning continues in the final year, where fewer modules comprise lectures, with an average of six hours a week. This emphasis on using the independent study and research skills developed in earlier years is continued through the research and development project that you will undertake. Under the supervision of a member of academic staff with who you will have weekly one-to-one supervisory meetings, you will undertake a detailed study of a particular area resulting in a significant piece of independent research.

Throughout the course, you also have access to an academic adviser who will provide you with academic support and guidance. You will meet regularly with your academic supervisor throughout your degree and they act as your first point-of-contact for any academic queries. In addition to this, all members of teaching staff have weekly tutorial hours when they are available to meet on a 'sign-up' basis. The Department also has an exciting programme of research seminars and talks from industrial companies which undergraduate students are strongly encouraged to attend.

Admissions Process

Subject requirements, level and grade

A level offer – A*AA including Mathematics and Physics.

BTEC Level 3 National Extended Diploma/OCR Cambridge Technical Extended Diploma – D*DD and Mathematics at grade A at A level (or equivalent) are required.

IB Diploma score – 38 with 666 in higher level subjects including Mathematics and Physics.

In addition to satisfying the University's general entry requirements, please note:

- We welcome applications from those with other qualifications equivalent to our standard entry requirements and from mature students with non-standard qualifications or who may have had a break in their study.
- If you do not satisfy our general entry requirements, the Foundation Programme (www.dur.ac.uk/foundation.programme/) offers multidisciplinary degrees to prepare you for a range of specified degree courses.
- If you are an international student who does not meet the requirements for direct entry to this degree, you may be eligible to take an International Foundation Year pathway programme at the Durham University International Study Centre (www.durhamisc.com/?ch=uniweb&cc=signposting&cid=uniweb&utm_source=signposting&utm_medium=signposting&utm_campaign=uniweb).
- We are pleased to consider applications for deferred entry.

Science A levels

Applicants taking Science A levels that include a practical component will be required to take and pass this as a condition of entry. This applies only to applicants sitting A levels with an English examination board.

English Language requirements

Please check requirements for your subject and level of study (www.durham.ac.uk/learningandteaching.handbook/1/3/3/)

How to apply

www.durham.ac.uk/undergraduate/apply

Information relevant to your country

www.durham.ac.uk/international/country.information/

Fees and Funding

The tuition fees for 2022/23 academic year have not yet been finalised, they will be displayed here once approved.

The tuition fees shown for **home** students are for one complete academic year of full time study and are set according to the academic year of entry. Fees for subsequent years of your course may rise in line with an inflationary uplift as determined by the government.

The tuition fees shown for **overseas and EU** students are for one complete academic year of full time study, are set according to the academic year of entry, and remain the same throughout the duration of the programme for that cohort (**unless otherwise stated**).

Please also check costs for colleges and accommodation (www.durham.ac.uk/undergraduate/accommodation/costs/).

Scholarships and funding

www.durham.ac.uk/undergraduate/finance

Career Opportunities

Department of Engineering

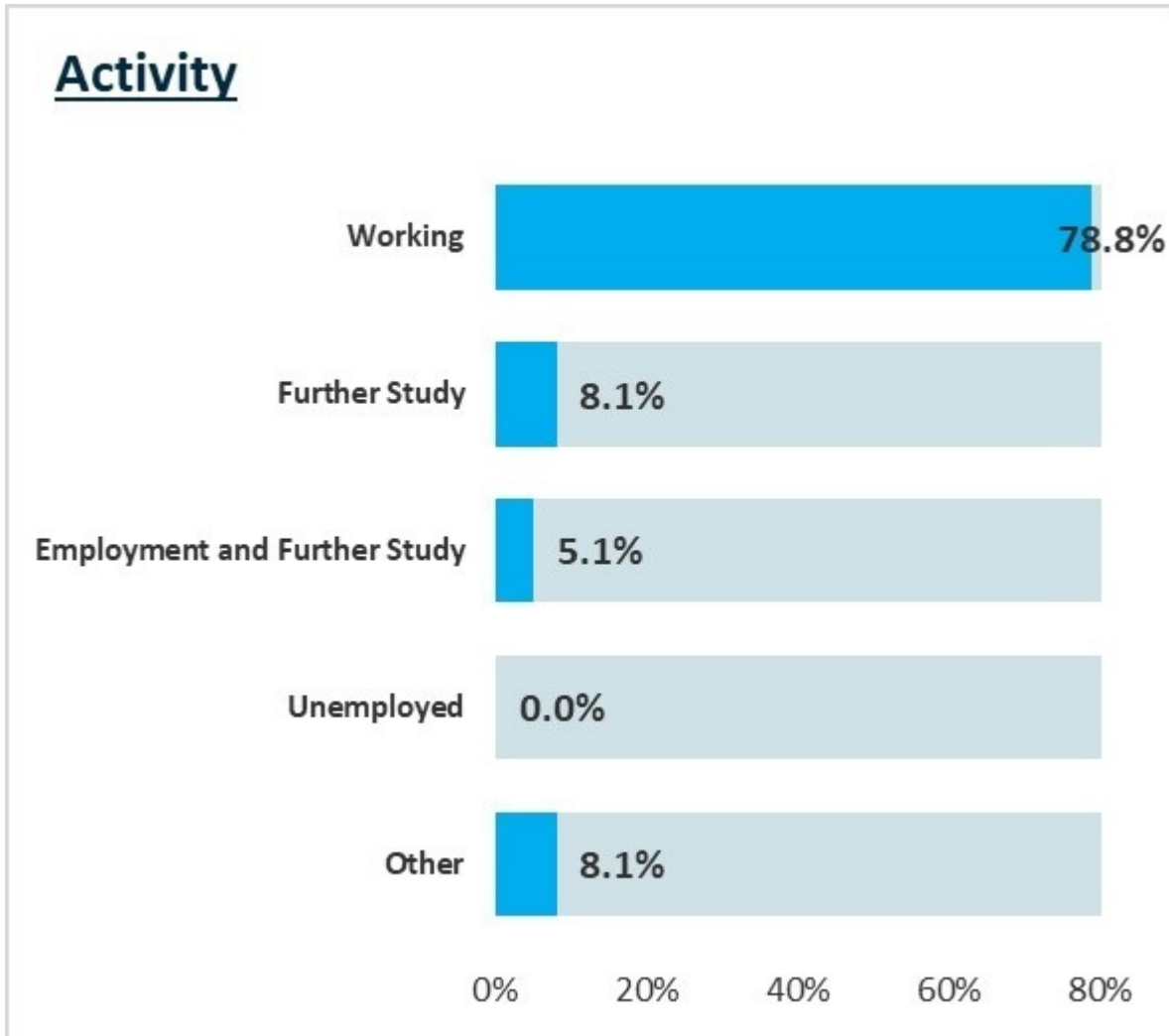
Of those students who graduated in 2018:

- **92%** are in paid employment or further study 15 months after graduation across all our programmes

Of those in employment:

- **93%** are in a professional or managerial job
- Average salary of £30,000.

(Source: HESA Graduate Outcomes Survey. The survey asks leavers from higher education what they are doing 15 months after graduation. Further information about the Graduate Outcomes survey can be found here www.graduateoutcomes.ac.uk)



Open days and visits

Pre-application open day

Pre-application open days are the best way to discover all you need to know about Durham University. With representatives from all relevant academic and support service departments, and opportunities to explore college options, the open days provide our prospective undergraduates with the full experience of Durham University.

Please see the following page for further details and information on how to book a place:
www.durham.ac.uk/opendays

Discover Durham Tours

Discover Durham tours offer a brief introduction to the University. The tour begins at one of our undergraduate colleges, where you will receive an introductory talk from a member of college staff, followed by a tour of the college by current students.

www.durham.ac.uk/undergraduate/live/visit/discoverdurham

Overseas Visit Schedule

www.durham.ac.uk/international/office/meetus

Department Information

Department of Engineering

Overview

Our modern engineers are capable of solving the problems of the twenty-first century, bridging the traditional engineering disciplines – from offshore wind turbines to mechanical devices manufactured on a microchip.

Our Engineering degrees are accredited by the relevant engineering institutions, for example the Institution of Mechanical Engineers, the Institution of Engineering and Technology, the Joint Board of Moderators (including the Institution of Civil Engineers and the Institution of Structural Engineers, among others) and the Royal Aeronautical Society. You will be taught by expert staff, who are all actively engaged in research at the frontiers of modern engineering analysis, design and practice.

Rankings

- 5th in *The Complete University Guide and the Guardian University Guide 2021*.
- 6th in *The Times and Sunday Times Good University Guide 2021*.
- 8th in *The Guardian University Guide 2021*.

Staff

For a current list of staff, please see the School's web pages (www.dur.ac.uk/ecs/people/).

Facilities

Each week in the first to third years you will do a laboratory class which involves three hours with a set experiment where you follow a lab script writing up the results as you go. We have made a conscious effort to use real pumps, electronics, beams, etc as this gives you a much better idea of how well analytic theory does (and does not) work. Lab classes cover everything from breaking reinforced concrete beams, to building electronic circuits, balancing rotating masses, operating a 1.8 litre diesel engine test bed or a supersonic wind tunnel. Students also make use of our extensive research facilities during their final-year projects.

Website

www.durham.ac.uk/engineering

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