



CARDIFF
UNIVERSITY

PRIFYSGOL
CAERDYDD

School of Engineering
Undergraduate
Degree Programmes

www.cardiff.ac.uk/engineering

Cardiff University School of Engineering

**WORLD
LEADING
research**

**ACADEMIC
excellence**

**HIGH
EMPLOYABILITY**

**Transferable
SKILLS**





Friendly **Supportive** environment
Modern teaching laboratories

92% of our graduates
were in employment and/or further
study six months after graduating

Student Bloggers

From study tips to where to eat, to societies, weekend trips and where to get your books, our student bloggers are real students talking about the reality of being a student at Cardiff.

Don't miss their latest blogs for the chance to find out more about what it's like to study and live in Cardiff.

www.cardiff.ac.uk/studentbloggers

Discover the **Cardiff Experience**

A leading university . . .

- ▶ You'll be part of a Russell Group university – one of the UK's world-class universities.
- ▶ You can choose from more than 350 degree programmes. The Cardiff University degree is known and respected worldwide with a substantial number accredited by the professions and other external bodies.
- ▶ You'll benefit from outstanding teaching in a research-led environment – Cardiff is ranked in the UK's top 5 universities for research quality.
- ▶ Staff include a Nobel Laureate and numerous Fellows of the Royal Society and other prestigious institutions.

in an outstanding city . . .

- ▶ You'll live in a friendly, compact and safe city with all your study, living and leisure needs within walking distance.
- ▶ Your money will go further at Cardiff with capital city attractions at provincial prices – Cardiff is the UK's second most affordable university city.¹

with able and motivated students . . .

- ▶ You'll be at a first choice university where demand for places is strong.
- ▶ You'll be studying in an environment with able and motivated students who have high grades at A-level or equivalent.
- ▶ You'll be at an international university with students from more than 100 countries who have excellent career prospects.

who have excellent career prospects.

- ▶ You can be confident of your future prospects – 96% of our students were employed or had entered further study within six months of completing their studies.²
- ▶ You'll be in demand – Cardiff is among the top 25 universities targeted by employers seeking high calibre graduates.³





Notes

1. Research by Natwest 2018
2. HESA Destination of Leavers Survey 2016/17
3. High Fliers Research The Graduate Market 2017



CardiffConnected

www.cardiff.ac.uk

-  [@cardiffuniug](https://twitter.com/cardiffuniug)
-  facebook.com/Cardiffuniug
-  instagram.com/cardiffuni
-  youtube.com/user/cardiffuni

Contact us

For students from the UK and EU:
Tel: 029 2087 4455
Email: enquiry@cardiff.ac.uk

For students from the rest of the world:
Tel: +44 (0)29 2087 4432
Email: international@cardiff.ac.uk

Welcome

You are now at the challenging and exciting stage of your life, where you have to choose what to study at university and which university will best suit your aspirations.



This brochure contains details of the engineering degree programmes offered by the School of Engineering. Our degree courses cover seven different areas of Engineering and within each programme there are further options of MEng or BEng, full-time or sandwich degrees. Many of our students opt for a Year in Industry which is highly valued by employers, and others choose to improve their language skills with one of our Year in Europe programmes. We also offer an MEng International degree programme, which gives our students the opportunity to study with one of our many partner universities outside of Europe. These options have been designed to give you a degree programme which will meet your needs now and for the future. All of our degree programmes are accredited by the relevant professional institution, which is essential for students who wish to become Chartered Engineers.

We have very strong links with industry so you may find yourself working with companies to solve real life current problems. We also have some of the best teaching and research facilities in the UK as well as academic staff who are internationally renowned for their research.

The School of Engineering is a supportive and friendly environment in which to study and we provide the very best

facilities and academic support for our students. We value our students and their welfare is very important to us. As part of our overall framework of support, each student is allocated a personal tutor who becomes their first point of contact throughout their time here. The School is committed to equality of opportunity and inclusiveness and diversity.

The aim of the School is to provide you with a friendly and stimulating environment, which allows you to fulfil your potential and enjoy your university experience. I look forward to welcoming you to the School, if you should choose to join us, and I wish you every success in your future studies.



Professor Sam Evans
School of Engineering

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Important Legal Information

The contents of this brochure relate to the Entry 2020 admissions cycle and are correct at the time of going to press in March 2019. However, there is a lengthy period of time between printing this brochure and applications being made to, and processed by us, so please check our website [www.cardiff.ac.uk] before making an application in case there are any changes to the course you are interested in or to other facilities and services described here. Where there is a difference between the contents of this brochure and our website, the contents of the website take precedence and represent the basis on which we intend to deliver our services to you.

Any offer of a place to study at Cardiff University is subject to terms and conditions, which can be found on our website [www.cardiff.ac.uk/offerterms] and which you are advised to read before making an application. The terms and conditions set out, for example, when we might make changes to your chosen course or to student regulations. It is therefore important you read them, and understand them.

If you are not able to access information online please contact us:

Email: enquiry@cardiff.ac.uk

Tel: 029 2087 4455

Your degree: Students admitted to Cardiff University study for a Cardiff University degree.

Cardiff: A capital city



The Principality (Millennium) Stadium nestles in the heart of the city, and is home to numerous sporting events and concerts throughout the year

Cardiff is a thriving and attractive city, which is widely recognised as an outstanding place in which to live and study. It combines all the advantages of a compact, friendly and inexpensive location, with the cultural and recreational facilities of a modern capital city.

Cardiff offers everything from the excitement of the city to the peace and tranquillity of the nearby coast and countryside. With its distinctive character, good quality of life, and growing national and international reputation, it hosts many high-profile cultural and sporting events, including international rugby, soccer, cricket and motor sport.

When it comes to entertainment, Cardiff is well-equipped to satisfy student needs. There is a multitude of cafés, pubs and nightclubs. The city is home to the world-renowned Welsh National Opera, it boasts prestigious concert venues such as the Wales Millennium Centre, St David's Hall and the Motorpoint Arena, as well as the iconic Principality Stadium, the National Museum Wales, several theatres and the historic Cardiff Castle.

Cardiff is the location for award-winning television productions, including Doctor Who, Sherlock, Torchwood and Casualty.

The city is one of the UK's best shopping destinations, with St David's Dewi Sant retail centre standing alongside pedestrianised shopping streets, indoor and outdoor markets, and a fascinating network of glass-canopied Victorian and Edwardian arcades.

Cardiff also has more urban green space than any other UK city, and offers easy access to the countryside, coast and mountains.

Lively, elegant, confident, cosmopolitan and ambitious are all words readily used to describe modern-day Cardiff. Together, the city and the University provide students with the 'Cardiff Experience', a lifestyle our students remember long after graduation.



The surrounding countryside and coast offer superb opportunities for outdoor pursuits

Don't just take our word for it . . .

"Cardiff is a thriving and attractive capital city, widely recognised as an outstanding place to live."

Complete University Guide 2019



Cardiff is one of the UK's best shopping destinations

Come and see for yourself . . .

Cardiff benefits from excellent road and rail links with Britain's other major towns and cities. London, for example, is two hours by train, and the M4 links both the West and South of England, as well as West Wales. Travel to the Midlands and to the North is equally convenient. The journey by road from Birmingham, for example, takes only two hours. The main coach and railway stations are both centrally placed, and Cardiff also benefits from an international airport.



The Wales Millennium Centre is a world-class venue for the arts

Cardiff: A leading university





Cardiff University has an international reputation for excellence in teaching and research, built on a history of service and achievement since 1883, and recognised by our membership of the Russell Group of leading research-led universities.

With attractive and compact campuses, excellent student accommodation, and a hugely popular Students' Union, all within easy walking distance of each other in a thriving city, it is not surprising that Cardiff is a first choice university for many.

We admit approximately 5,000 undergraduate entrants each year, the majority of whom are school and college leavers, and have high grades at A-level or equivalent. While competition for entry is strong, Cardiff is an inclusive university with a good record on widening participation and fair access, and we welcome applications, irrespective of background, from everyone with the potential to succeed at Cardiff University.

The University's Cathays Park Campus is located in and around the impressive Portland stone buildings, parks and wide tree-lined avenues that form Cardiff's attractive civic centre. The majority of academic schools are located here - just a few minutes' walk from the city centre. The three academic schools offering healthcare courses (excluding

Optometry and Pharmacy) are based at the Heath Park Campus, approximately one mile away, which is also home to the University Hospital of Wales.

Although dating from 1883, Cardiff is focused on the 21st century, and has modern state-of-the-art buildings and facilities. The University has invested substantially in its estate in recent years and continues to do so today. Most academic schools have benefited from major refurbishment, including new and well-equipped laboratories, lecture theatres, libraries and computing facilities. International opportunities are available via our Global Opportunity Centre. These include study, work and volunteering placements in 27 EU countries as well as international exchange opportunities. All students also have the opportunity to study a language, in addition to their degree, through the University's Languages For All programme.

The University takes its environmental, safety and security responsibilities very seriously. It has comprehensive policies in place which are making great savings in energy consumption and, to support the safety and security of all members of the University community and their property, there is 24-hour security cover throughout the campus.

What the Guides say . . .

"Cardiff University is highly rated on a local and global scale."

The Telegraph 2018

"Cardiff University is a hugely popular UK university...[it] has a reputation for world-class research and provides an excellent experience for its student body."

Telegraph University Guide 2018

"The cost of living is relatively low compared to many other UK cities and there are excellent public transport links."

Telegraph University Guide 2018



Living in Cardiff





As a fast developing capital city, Cardiff is a great place to be a student. It's large enough to offer you an exciting variety of activities and entertainment, but small enough for you to feel comfortable in.

Accommodation

Cardiff offers guaranteed University accommodation of good quality and value, and a range of residences to suit individual preferences and budgets.

All undergraduates who accept their offer of a place from Cardiff, on a firm basis, are guaranteed a single occupancy place in University residences during their first year of study.

Please see our website for full details of our accommodation guarantee and associated deadlines:

www.cardiff.ac.uk/residences

The University is continually investing in its student residences, and the views of students are taken into account at the design stage. Unusually for a civic university, most of our residences are within easy walking distance of lecture theatres, libraries, laboratories, the Students' Union and city centre.

There are 15 different residences, providing more than 5,500 study bedrooms and students can apply for the residences which best suit their preferences, interests and budgets. Some 70% have en-suite shower and toilet facilities and all halls of residence have computer network connection points and access to Wi-Fi.

Fees depend on the facilities included and whether catered, part-catered or self-catered, but prices compare very favourably with those of other UK universities. Besides managing University property, the Residences Office maintains close links with the private sector and provides assistance to students seeking to rent or share houses or flats.

Student Life

The Students' Union

Cardiff Students' Union is one of the biggest, best and most active in Britain. A multi-million pound investment has been made in Union facilities in recent years,

which has included a new venue called Y Plas, which at night becomes a nightclub. Hosting live music, club nights, stand-up comedy, fashion shows and awards ceremonies, there's lots to keep you entertained from your first day to your last.

Other facilities include a food court, a bank, a print shop, a hair salon and a bookshop. The Lounge offers IT and Skyping facilities, meeting rooms and a "chill-out" area, as well as snooker tables and multi-faith prayer room. The Union also has its own letting agency and an Advice and Representation Centre. In addition, it is home to CU TV and Xpress Radio (the students' own TV and radio stations) and more than 200 cultural, political, religious, social, sporting societies and clubs.

Jobshop

Jobshop is the Union's own student employment service and provides casual, clerical and catering jobs around the University to hundreds of students.



What the Guides say . . .


"Cardiff has one of the biggest, best and most active students' unions in the UK, with high quality facilities including Y Plas, a 2,150 capacity nightclub; and the Great Hall, a major concert venue."

Complete University Guide 2019

Cardiff is "the UK's second most affordable university city."

Natwest Student Living Index 2018

School of Engineering



The School of Engineering combines excellence in teaching and research with a commitment to supporting industry, society and the economy. You will find that our internationally recognised research profile and our strong links with industry will enhance your learning experience as an undergraduate student and ensure that you have the best preparation for a career as an engineer.

Quality and Professional Accreditation

The School is a broadly based engineering school with a wide range of fully accredited degree programmes which give you many options to choose from. You have the opportunity to choose a year working in industry as part of your degree, or perhaps spend a semester abroad in one of our many partner English-speaking universities, as well as the choice of a three year BEng or the more project focused four year MEng degree course. The School is internationally recognised for its research and its strong links with industry and this enhances the learning experience for our students. Cardiff is one of the very few engineering schools nationwide which is an invited member of both the UK Electronic Skills Foundation and the Power Academy.

In the last Research Excellence Framework, undertaken by the UK funding councils, the School's research in Civil Engineering was ranked 1st in the UK for quality and General Engineering research (incorporating our other engineering disciplines) was ranked 7th. Overall, 97% of our submitted research was rated as internationally excellent or world leading.

Our research in both the Civil and General Engineering categories was also rated top in the UK for its impact.

All our degree programmes are accredited by the relevant professional engineering institutions, such as the Institution of Civil Engineers, the Institution of Engineering and Technology and the Institution of Mechanical Engineers.

Facilities

Our high standard of teaching and research is complemented by outstanding, up-to-date facilities into which we are continuously investing. The School is located in the modern complex known as the Queen's Buildings, the result of a £30 million investment. In recent years the site has seen further improvements with a complete refurbishment of the library, which has won a national award for innovative design. In addition, the School has opened a large flexible learning space called the Forum. It is located in the heart of the School, next to the Teaching Office and has spaces for up to 120 students and staff to engage in group learning, single study, or to just to grab a coffee and chat.

The School has recently made available an array of 3D printers, which are for use by students and staff at any time in the Forum.

The complex is close to other academic schools, the Students' Union and the city centre. It houses outstanding self-contained facilities, including spacious and well-equipped teaching and research laboratories, and a library containing a broad range of books and journals, the latest computer and electronic resources, together with numerous quiet areas for study.

We provide our students with extensive computing facilities, which can be used to access specific reference material and the University network. We also provide for any specialised computing needs that are required to undertake your engineering studies such as particular software packages.

We recognise that the social aspects of university life are important and the Queen's Buildings complex has its own facilities in which you will be able to relax and socialise. It houses a large refectory which serves great value breakfasts, snacks, lunches and evening meals.



A student prepares to test for UV ageing



Students in Trevithick Library

Lectures and Assessment

The School's teaching activities are overseen by a Director of Teaching and Learning. They are organised into three main discipline groupings, each headed by a Course Director responsible for the management of the degree programmes included in each group.

No matter which degree programme you choose, you will be taught the fundamental aspects of engineering through a combination of lectures and tutorials, supplemented by the practical aspects of engineering, which are taught through laboratory and project-based work. On average, you can have up to 18 hours of timetabled lectures, laboratory classes and tutorials each week and will be expected to supplement this with your own private study.

Our teaching is organised into modules and you will take 120 credits per year, balanced between each of the two semesters. Each semester consists of eleven teaching weeks, one revision week and an examination period. Help with specific aspects of a module can be directly obtained from the lecturers concerned; staff will be happy to clarify any material or answer any of your questions.

Assessment is undertaken using a variety of different methods, including formal written examinations, case studies, assignments and project work.

Learning Environment

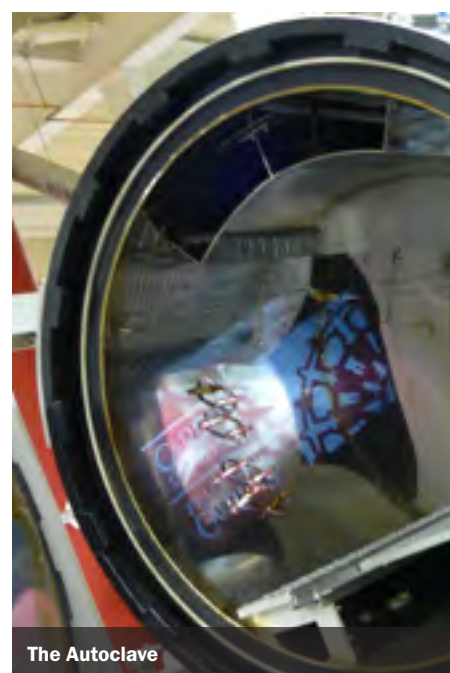
The School of Engineering promotes a friendly and supportive learning environment, with a diverse community of staff and students.

We are proud to have received an Athena Swan award for our dedication to providing a supportive culture for women in science and we have a higher than average percentage of female undergraduate students, researchers and staff.

The School and the University have dedicated provisions for students who need academic or personal support. The School provides a special maths surgery for students who need extra support with their maths skills. We also have an accessible curriculum policy that ensures that teaching and learning is available to all students, including those with disabilities.

Support Through Your Studies

Your first year of academic life will expose you to a broad range of new and exciting experiences. To help you through this transitional period in your life, upon starting your studies at Cardiff, you will be assigned a personal tutor who is a member of the academic staff associated with your degree programme. Your tutor will be there to advise you on academic, non-academic and personal matters in a confidential and informal manner as and when you need some guidance. We aim to help you overcome any problem, however big or small, as smoothly and quickly as possible. If more specialist assistance is required, then problems are referred to the University's Student Support Services where trained counsellors are on hand to provide guidance on a range of issues.



The Autoclave



The School of Engineering

What our Students Say . . .

We asked our students what they thought about being an Engineering student at Cardiff University. From our state-of-the-art facilities to nights out in busy Cardiff, this is what they had to say . . .

Living in Cardiff...

"I really love Cardiff. It's absolutely fantastic. I really like that it's not a campus university so you're not isolated. Cardiff University has everything I expected a university to have."

Hannah Little, Civil Engineering

"Everyone is so friendly! Also, it's a really international city. If I'm craving food from home in Egypt I can find all the ingredients I need just a short walk away."

Shrouk El-Attar,

Electrical and Electronic Engineering

Studying Engineering...

"The lecturers are very passionate and know what they are talking about and the admin staff are really helpful."

Ben Tapley, Architectural Engineering

"Small groups of students meet regularly with personal tutors in the first year, which is a good academic and social support system. I wouldn't choose any other course, and I love Cardiff!"

Nadeem Goussouss,

Electrical and Electronic Engineering

Facilities...

"I was so impressed with the facilities. The labs are the most impressive and I love working in them."

Zuzanna Stone, Civil Engineering

"It's an impressive building, not just architecturally but in terms of the facilities as well. I love going to the library and I use it a lot. It's really useful that it's open evenings and weekends. The library staff are really helpful and knowledgeable. It's a really good place to come and study."

Carlos Fernandez,

Mechanical Engineering

Social Life...

"I'm in the Engineering Society, I play squash with other Engineering students, and I went to the Engineering ball, which was great. There's a lot of stuff going on that's fun but that can also boost your CV."

Cordelia Overland, Civil Engineering

"The nightlife is great, I love it. Student nights out are fun, just lots of students out having a good time. There's lots of choice. You could go to a different club every single night of the week and have a good night."

Joshua Perkins, Medical Engineering

Job Prospects...

"I'm doing the Year in Industry scheme which is a great way of making money, gaining practical skills, putting theory into practice and securing a job for the end of the degree."

Anna Warwick, Mechanical Engineering

"There are lots of careers fairs which I enjoy because there are loads of people from industry. There's also lots of support with CV and application writing. I feel confident about my job prospects."

Luis De La Parte Aufran,

Mechanical Engineering



Links with Industry

All of our courses are informed by industrial collaboration and designed to give graduates of the School of Engineering the tools necessary to find and succeed in industrial employment.



Our links with business and industry provide support for student initiatives, visiting lecturers and opportunities for personal and professional development. Close ties with local, national and international employers often lead to employment or industrial placements for many undergraduate students. These links also actively support student-led initiatives, such as Engineers without Borders, and the Engineering Society.

School-wide project modules are supported by industrial collaboration with a number of companies, including Flintec, Ove Arup and Partners International, Atkins, GL Garrard Hassan, BAE Systems, EADS, and Babcock Marine.

Industrial Links with Undergraduate Courses

Speakers from industry give regular lectures on their relevant areas of expertise. These are great opportunities for students to hear experts speak on topics that are relevant to their degrees and also give an insight into working in industry. The Year in Industry scheme offers students the chance to make some money, put their engineering skills into practice, and increase their employability.

Even if you choose not to take an industrial placement, you will still benefit from industrial input in modules across all engineering disciplines.

In the waste management, recycling, and energy fields there is significant input from research contracts with companies such as Rolls Royce, EoN, Tata, and Stork Technical Services. Inputs are also received from companies such as Tidal Energy Ltd (TEL), Marine Current Turbines (part of Siemens), Bosch, ANSYS and Mabey.

In the field of Medical Engineering, modules are supported by collaboration with Biomet, Simpleware and Arthritis Research UK. Many contacts are linked to healthcare providers such as the Cardiff and Vale Orthopaedic Centre, Cardiff and Vale University Health Board, and the Medical Physics Department. Links have been forged with other University departments such as Biosciences, Psychology, the Business School and Dentistry, as well as clinicians in Orthopaedics and Radiography to ensure learning material is as up-to-date as possible.

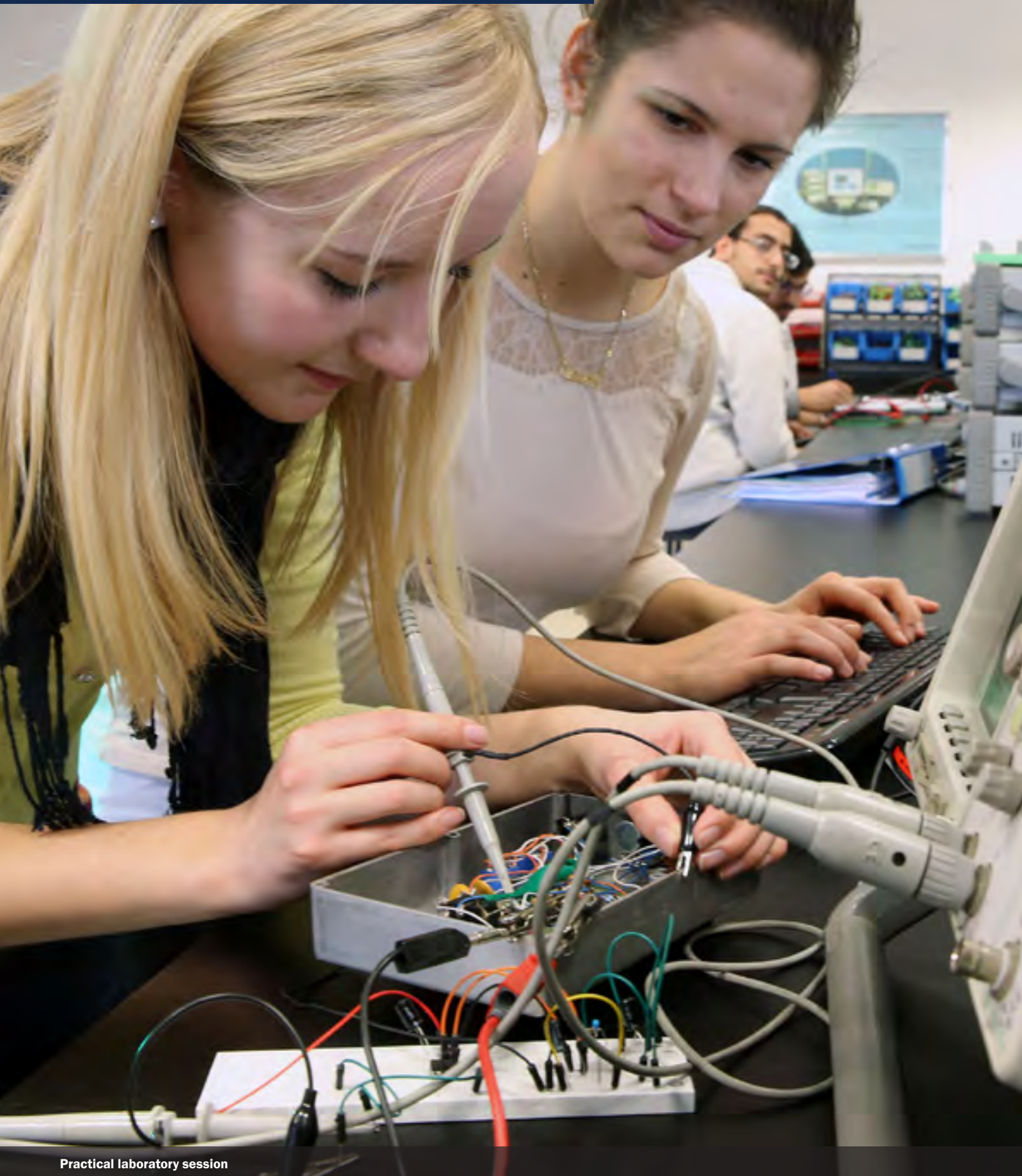
Industrial input in the fields of Electrical and Electronic Engineering comes from RWE, npower, Western Power Distribution, Cogent Power, Thyssen-

Krupp Electrical Steel, EADS, BT, BAE Systems, EADS, Babcock Marine, Agilent UK and Rhode & Schwarz.

In environmental and water engineering direct industrial input also comes from companies including Newport Galvanisers (a subsidiary of Wedge Galvanisers), GBCard and Partners, Jacobs Engineering, Capita Symonds, and Mott-MacDonald.



Degree Programmes and Entry Qualifications



Practical laboratory session



There are a number of programme options available to you for each of the degree courses.

The MEng (Hons) Programme

The MEng programme is an engineering degree which leads to a higher qualification than the traditional BEng programme, and requires an additional year of study. The programme shares the first two years with the relevant BEng programme, while the last two years expand and strengthen your knowledge in your chosen engineering subject. The MEng programme offers a quicker, more direct route to Chartered Engineer status than the BEng programme. Continuation on this programme is subject to good performance in your first two years of study.

The BEng (Hons) Programme

This programme is the traditional way of studying engineering and involves three years of study in your chosen subject, or four years if you choose the Year in Industry option. Not all engineers wish to seek chartered status - for instance, for those opting for certain aspects in research, careers in the Forces, the financial sector, or some kinds of consultancy work - and in these cases the BEng degree may prove a more appropriate choice than the MEng. Chartered Engineer status still may be attained with a BEng degree, although the professional institutions require further studies to be undertaken.

The Year in Industry Programme

The sandwich programme is an enhancement of either the MEng or the BEng programme as it incorporates a further year of industrial placement. This placement takes place after you have completed your first two years of engineering study, so the MEng programme takes five years to complete and the BEng programme takes four years. However, you are paid a salary during your industrial placement and our experience is that sandwich programme students often obtain higher degree gradings than those taking straight degree programmes.

The Year in Europe Programme

The Year in Europe programme is also an enhancement of the MEng programmes, but this time, instead of spending a year in industry, you will spend a year attending a Higher Education establishment in France, Germany or Spain. Your year in Europe is undertaken after completing your first three years of study in Cardiff, so the MEng programme will take five years to complete.

The MEng International Programme and MEng International with a Year in Industry

The MEng International is a degree scheme available in all subject areas which offers students the opportunity to go abroad during their studies. It involves spending a semester in the third year of the programme at one of the School's partner institutions outside of Europe (for example, in the US, Canada, Australia and other destinations). This programme has been introduced to give students the opportunity to gain international experience, which is becoming increasingly valued by employers.

The MEng with a Year in Industry is also available as an MEng with an international option. This new programme allows you to spend a year in industry and to spend a semester studying abroad.

The Foundation Year

How to Become an Engineer without Mathematics A-level

If you are one of the many people who would like to become an engineer but you do not have the appropriate mathematical qualifications, we have a programme to suit your needs. The programme is called the Foundation Year and is specially designed to give you the necessary basic knowledge to enable you to cope with an engineering degree programme.

Although the Foundation Year only lasts for one year, it should be considered as an entry route to one of our degree programmes. It is not a stand-alone year, but the initial part of a programme of study leading to an MEng or BEng degree. Providing you have successfully passed the Foundation Year, you will automatically progress to the first year of your chosen degree programme.

If you are a 'home' student on the Foundation Year, you will qualify for mandatory student support (means-tested assistance with tuition fees and Student Loan) to cover all years of study at Cardiff.

What Sort of Qualifications Do I Need?

The programme is aimed at a wide range of potential applicants. For instance, if you have a GCSE pass in Mathematics and good A-level passes in non-mathematical subjects, the Foundation Year would be an ideal route for you to enter engineering. Likewise, if you have a BTEC or a similar vocational qualification in a non-engineering subject, an Overseas Baccalaureate or School Leaving Certificate that is not recognised for direct entry to one of our degree programmes, then the Foundation Year could be just what you're looking for.

Special consideration is sometimes afforded to mature students who show the drive, commitment and potential necessary to complete the Foundation Year and continue further to gain a degree. In these cases, formal qualifications may be waived after consideration of vocational experience, although some evidence of mathematical and scientific potential would need to be shown.



The School of Engineering's main entrance

Programme Structure

The programme is designed to expose students to a broad spectrum of engineering through modules consisting of lectures, tutorials and case studies. These include aspects of Mathematics, Physics and Information Technology that are relevant to engineering.

The practical nature of the programme contrasts with the way such subjects may have been presented at school. Assessment is by project work, continuous assessment and end of semester examinations.

How to Apply

When completing your UCAS application, as well as using the H101 course code, please indicate the engineering degree programme you wish to study following the Foundation Year.

Please note: if you complete the Foundation Year to a satisfactory standard, you are not necessarily obliged to follow your original choice of degree programme.

Entry Requirements

AAB-ABB at A-level excluding Mathematics. For the most up-to-date entry grades or for alternative entry requirements including BTEC, IB etc please consult the website:
www.cardiff.ac.uk/study/undergraduate/courses/browse-by-school/school-of-engineering

The International Foundation Programme



Students doing group work

The International Foundation Programme in Engineering

This is a one-year academic programme specially designed to give you the academic and English language skills you need to enter undergraduate study in Engineering. All students who pass the International Foundation Programme with an average of at least 50% will be guaranteed a place on their chosen degree course in the School of Engineering.

The Cardiff University International Foundation Programme is designed for:

- ▶ Students whose secondary school-leaving qualification means that an extra year's study is necessary to reach the appropriate level for undergraduate study in the UK.
- ▶ Students with appropriate academic qualifications who need to develop their English language and study skills in preparation for an undergraduate degree programme at Cardiff University, or elsewhere in the UK.

Course Structure

The course is designed to prepare students for undergraduate study in Engineering. The modules introduce students to a broad spectrum of engineering through lectures and tutorials, and cover aspects of Calculus and Mechanics.

The modular Engineering programme includes:

- ▶ Introduction to Mechanics
- ▶ Introduction to Calculus
- ▶ Engineering Principles

The English Language modules are:

- ▶ English Language & Study Skills
- ▶ English Language & Study Skills II
- ▶ English for Academic Purposes
- ▶ Integrated Study Skills
- ▶ British Social and Cultural Environment

One of the most important aims of the Foundation Programme is to provide the ideal preparation for you to do well in an academic course taught in English. The course will review your knowledge of English grammar and vocabulary and help you to improve so that you can develop a solid foundation for academic use. You will practise reading, writing, listening and speaking to develop accuracy and fluency. The course will include different written and spoken formats to help develop academic style.

Study of the culture and requirements of British higher education will prepare you for different teaching and learning methods, such as presenting a seminar or writing a report. By the end of the course you should feel confident enough in your English ability to be able to contribute fully to class discussions, complete written assignments and get the most out of your studies at Cardiff University.

Further information about core modules can be found at: www.cardiff.ac.uk/ifp

How to Apply

Full information about the Programme and an application form for the International Foundation Programme can be found at: www.cardiff.ac.uk/ifp or contact foundation@cardiff.ac.uk or tel: +44 (0)29 2087 6416.

Foundation Year

If your English is good, but you need extra help with your Mathematics, the School of Engineering's own Foundation Year might be the course for you. The Foundation Year is specially designed to give you the necessary basic knowledge to enable you to cope with an engineering degree programme. Although the Foundation Year only lasts for one year, it must be considered as an entry route to one of our degree programmes. It is not a stand-alone year, but the initial part of a programme of study leading to a MEng or BEng degree. Providing you have successfully completed the Foundation Year, you will progress to the first year of your chosen degree programme.

The Foundation Year is designed for students whose English is good, but whose secondary school-leaving qualification means that an extra year's study is necessary to reach the appropriate level for undergraduate study in the UK. It is also for students with good results in non-Mathematical subjects who would like to pursue a career in Engineering, and who, therefore need additional Mathematical study to undertake an Engineering degree programme.

Course Structure

The course is similar to the International Foundation Programme, but has additional modules in engineering-related subjects.

Assessment is by project work, continuous assessment and end of semester examinations.

How to Apply

For this course you need to apply to UCAS - see page 35 for details. When completing your UCAS form, as well as using the H101 course code, please indicate the engineering degree programme you wish to study following the Foundation Year.

Architectural Engineering

Are you looking for a career that is creative, challenging and fulfilling? Then our degree programme in Architectural Engineering may well suit your needs. It is an engineering degree with a human face, which combines the challenges and inventiveness of the modern building industry with a flair for originality and creativity.

The creation of buildings is a complex operation requiring the skills of many professionals including architects, structural engineers, building services engineers and many more. The Architectural Engineering degree programmes provide a broad-based learning environment, which will enable you to understand the underlying process of building construction.

Throughout this process, particular attention is focused on structural engineering and architectural studies in addition to the core civil engineering material. In support of multidisciplinary working, it is necessary to develop a wide range of technical and personal skills, supported and enhanced by practical application of these skills, for example, in design classes such as the Architectural Engineering Design Studio, where students produce multidisciplinary design linking creative design, architecture, building functions, structure and services.

Practical and investigative skills are further enhanced by field courses and research projects, whilst elements of the course are supported and delivered by major engineering companies providing links with industry throughout your time here.

Course Structure

This degree programme is available at both the MEng and BEng level. The MEng, although covering the same topics as the BEng, provides greater depth in the core topics and more width in supporting modules. This is typified by the MEng offering greater penetration into areas such as environmental issues and advanced architectural topics.

Both programmes offer a Year in Industry option where the student works in industry for a year and then returns to complete their degree programme. These have the same academic content as the full-time programmes, but the additional year is spent gaining experience in industry, either at home or abroad.

This takes the form of supervised training with a suitable company, which will pay a normal salary for the work undertaken. Experience shows that the year of industrial training enhances understanding of the relevance of the teaching and tends to lead to improved performance in the final examinations.

Students are also able to enrol on an MEng International degree option which enables you to study at one of our worldwide partner universities for a semester.

In addition, the MEng programme offers the opportunity to spend an additional year at a European university through the Year in Europe degree option. This is for those who wish to develop their language skills in either German, French or Spanish. Special language modules are provided throughout the degree programme for these students.



Architectural Engineering students at work

All programmes are accredited by the Institution of Civil Engineers and Institution of Structural Engineers, with the MEng satisfying the educational requirements to become a Chartered Engineer (CEng) and the BEng providing the educational base to become an Incorporated Engineer (IEng), whilst also partially satisfying the requirements for CEng.

Employment

The Architectural Engineering degree programmes in Cardiff are recognised as being of very high quality. This, coupled with the fact that Cardiff is recognised as being one of Britain's leading centres for the teaching of engineering, means that our graduates readily obtain good quality jobs. Most often architectural engineers find employment in multidisciplinary design practices, where professionals from a variety of disciplines will work. In addition, some of our graduates decide to work for traditional architectural practices or firms of structural engineers. Others prefer contracting and onsite management, providing a key link between the design engineers and architects.

Excellence in Architectural Engineering Research and Impact

In the latest Government assessment of research Civil Engineering at Cardiff (under which Architectural Engineering lies) was rated 1st in the UK, as well as being 1st in the UK for the impact of its research. Our work is internationally leading, and our students contribute to this through projects and further study. If you wish to pursue research after graduating, there are plenty of opportunities at Cardiff at both MSc and PhD level, in topics aligned to the undergraduate courses, such as sustainable construction and Building Information Modelling (BIM).



Students working in one of the School of Engineering's labs

Degree Programmes

MEng (Hons) 4 years full-time	H294
MEng (Hons) 4 years with a semester abroad (International)	H298
MEng (Hons) 5 years with a Year in Industry	H295
MEng (Hons) 5 years with a Year in Industry and semester abroad (International)	H299
MEng (Hons) 5 years with a Year in Europe	H291
BEng (Hons) 3 years full-time	H292
BEng (Hons) 4 years with a Year in Industry	H293

Accreditation

Institution of Structural Engineers
Institution of Civil Engineers

Entry Requirements

MEng: AAA-AAB at A-level.
Must include Mathematics.

BEng: ABB-BBB at A-level.
Must include Mathematics.

For the most up-to-date entry grades or for alternative entry requirements including BTEC, IB etc please consult the website: www.cardiff.ac.uk/study/undergraduate/courses/browse-by-school/school-of-engineering

Further information:
www.cardiff.ac.uk/engineering


Contact:

Dr Michaela Bray

Tel: 029 2087 9999

Email: engineering-ug@cardiff.ac.uk

Civil Engineering



Civil Engineering offers a stimulating and varied international career. Civil Engineers design, construct and maintain roads, bridges, buildings, airports, flood and coastal defences, tunnels, water supply programmes, dams and many other structures and projects. Civil Engineers are also employed in building construction, aircraft design, ship building and the oil industry as well as alternative careers such as in IT, accountancy and the legal profession.

As a Civil Engineer you would be working at the interface between the built and natural environments, designing and constructing the former whilst protecting and conserving the latter. The courses at Cardiff offer fundamental knowledge in key areas such as water, structural and geotechnical engineering, supported by application of this knowledge via design classes, research projects, laboratory classes and field courses.

These are supported by staff with a high level of industrial and practical experience. Industrial involvement in our courses arises at a number of points, with lectures and design all supported by relevant major companies. With a combination of core and optional studies they offer broad knowledge that allows you to specialise in a range of different areas, including structural engineering, geotechnical engineering, water engineering, environmental engineering and others.

Throughout, a thread of professionalism and personal development is present to encourage your progress to becoming an internationally recognised professional engineer.

Course Structure

Both the BEng and the MEng degrees are fully accredited by the Institutions of Civil and Structural Engineers. The MEng is an enhanced degree, with MEng students benefiting from advanced learning in design and management, and has become the preferred route to becoming a Chartered Engineer. The BEng is a three-year degree offering a route to becoming an Incorporated Engineer, or towards becoming a Chartered Engineer.

The Year in Industry programmes involve a year of paid practical training in industry. Our reputation makes it easy to place students with good companies and institutions locally, nationally and even internationally. Among the advantages of the sandwich programmes is that the practical

experience helps you to relate our teaching to current engineering practice, and many employers prefer graduates with significant practical experience.

We also offer an MEng International programme which enables students to spend a semester in the third year studying at one of over 70 partner universities overseas.

The Year in Europe programme is aimed at those students undertaking an MEng who already have some language skills and wish to enhance them, offering you invaluable experience of living and working overseas. Language classes are provided to support your development and preparation for the year abroad, whilst during your time away contact is maintained with Cardiff through support from a dedicated tutor.

Employment

Employers recognise that the School of Engineering is one of Britain's leading centres for the teaching of engineering. Our Civil Engineering graduates readily find employment with a large number of employers such as design consultancies, construction contractors, utilities and local and national governments. A substantial number of graduates begin work in relevant industry positions, either as a consultant, focussing on design and project management, a contractor, focussing on construction processes and on-site work, or possibly in a governmental or regulatory role, looking at the bigger picture. In addition, some of our graduates choose to find work outside Civil Engineering, with the analytical and problem-solving abilities provided by the degree making them highly employable in a range of fields.

Excellence in Civil Engineering Research and Impact

In the latest Government assessment of universities' research Civil Engineering at Cardiff was rated 1st in the UK, as well as being 1st in the UK for the impact of its research. Our work is internationally leading, and our students contribute to this through projects and further study. If you wish to pursue research after graduating, there are plenty of opportunities at Cardiff at both MSc and PhD level in areas such as structural engineering and geotechnical engineering, aligned to the taught material at undergraduate level.

Degree Programmes

MEng (Hons) 4 years full-time	H207
MEng (Hons) 4 years with a semester abroad (International)	H205
MEng(Hons) 5 years with a Year in Industry	H208
MEng(Hons) 5 years with a Year in Industry and semester abroad (International)	K3G1
MEng(Hons) 5 years with a Year in Europe	H209
BEng(Hons) 3 years full-time	H200
BEng(Hons) 4 years with a Year in Industry	H201

Accreditation

Institution of Civil Engineers
Institution of Structural Engineers

Entry Requirements

MEng: AAA-AAB at A-level.
Must include Mathematics.

BEng: ABB-BBB at A-level.
Must include Mathematics.

For the most up-to-date entry grades or for alternative entry requirements including BTEC, IB etc please consult the website: www.cardiff.ac.uk/study/undergraduate/courses/browse-by-school/school-of-engineering



Fracture testing



Students relaxing outside the School of Engineering

Further information:
www.cardiff.ac.uk/engineering

Contact:
Dr Michaela Bray
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Email: engineering-ug@cardiff.ac.uk

Civil and Environmental Engineering

Civil and Environmental Engineers have the skills to make a positive contribution to increasingly difficult problems faced by society and the environment. They contribute towards achieving a more sustainable society as well as solving technically challenging problems in the environmental field and beyond.

Society is facing an increasing number of environmental problems, global and local. Major risks to societies and economies from changing environments, access to clean, safe drinking water, and dealing with large and small scale waste and pollution issues are all tackled by civil and environmental engineers.

On our Civil and Environmental Engineering degree programme you will study a wide range of subjects in the environmental field that complement core studies in civil engineering, allowing you to tackle and solve these issues. Practical learning, in conjunction with specialist staff and with support from industry at a number of points, is interwoven throughout the course to give you experience of real-life problems, for example through field courses, design classes and research projects. An example is the Industrial Practice module, which provides the opportunity for students to work as professional engineering teams with an industrial collaborator, identifying problems, and investigating and proposing economic designs for environmental improvement.

Course Structure

The Civil and Environmental Engineering degree programme offers a number of options. Both BEng (3 year) and MEng (4 year) courses are available, which are initially similar in structure but with the latter offering greater depth on specific technical aspects as well as application of design principles. All programmes offered are accredited by the Institution of Civil Engineers and the Institution of Structural Engineers. The MEng programme supplies the educational requirement to becoming a chartered engineer, whilst the BEng route partially satisfies this requirement, as well as providing the full requirement to become an Incorporated Engineer.

A Year in Industry (sandwich placement) scheme is available on both BEng and MEng courses, offering students invaluable industrial experience in a paid role. Students on this scheme work with contractors, consultants, clients and government bodies locally, nationally and internationally, gaining extensive understanding and responsibility in the real world and helping to focus and shape their future studies and career.

Our MEng (International) programme offers the regular MEng degree with one semester of the third year spent at an overseas partner university (a choice is available from over 70 institutions around the world). These courses are taught in English, and are in alignment with the courses

here at Cardiff University to ensure a seamless progression. Such international experience will be valuable experience in the internationally-focussed civil engineering industry.

The Year in Europe scheme, which offers a year in a European university, is for those on the MEng programme who wish to develop their language skills in either German, French or Spanish. Special language modules are provided throughout the degree programme for these students.



Combining civil and environmental engineering to design more sustainable cities



Employment

Graduates from this degree programme have no difficulty in obtaining relevant employment as there is good demand for engineers with environmental specialisms. Consultancy firms account for many of the job opportunities, as well as contractors, government organisations and other companies where highly numerate, analytical skills are in demand. Specific examples of the jobs that a Civil and Environmental Engineering graduate might end up doing include design, operation and management of water treatment plants; flood defence management; contaminated land remediation and reclamation; integrated transport systems; and general civil engineering consultancy.

Excellence in Civil and Environmental Engineering Research and Impact

In a number of cases our graduates opt to register for higher degrees, either to obtain more specialist skills before starting their careers or to undertake research. The School has an excellent reputation for research in the area of Civil and Environmental Engineering, being ranked 1st in the Civil Engineering area, and 1st for its impact in this area, in the latest government research assessment. It has recently won a number of awards for work in waste management and sustainable development with local companies. Our work is internationally leading, and our students contribute to this through projects and further study. If you wish to pursue research after graduating, there are plenty of opportunities at Cardiff at both MSc and PhD level in relevant areas in both civil engineering and environmental engineering, aligned to the taught material at undergraduate level.

Degree Programmes

MEng (Hons) 4 years full-time	H226
MEng (Hons) 4 years with a semester abroad (International)	H230
MEng (Hons) 5 years with a Year in Industry	H224
MEng (Hons) 5 years with a Year in Industry and semester abroad (International)	T1N9
MEng (Hons) 5 years with a Year in Europe	H225
BEng (Hons) 3 years full-time	H221
BEng (Hons) 4 years with a Year in Industry	H222

Accreditation

Institution of Civil Engineers
Institution of Structural Engineers

Entry Requirements

MEng: AAA-AAB at A-level.
Must include Mathematics.

BEng: ABB-BBB at A-level.
Must include Mathematics.

For the most up-to-date entry grades or for alternative entry requirements including BTEC, IB etc please consult the website: www.cardiff.ac.uk/study/undergraduate/courses/browse-by-school/school-of-engineering

Further information:

www.cardiff.ac.uk/engineering

Contact:

Dr Michaela Bray

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Email: engineering-ug@cardiff.ac.uk



Students testing in the Hydro-environmental laboratory



Electrical and Electronic Engineering

The Degree Programme

In studying Electrical and Electronic Engineering at Cardiff, you will be at the centre of a vibrant and fast moving engineering discipline. This research-led degree scheme will provide a fast-track towards attaining Chartered Engineer status with the Institution of Engineering and Technology. In addition, the strong links we have with our industrial partners can provide opportunities for work placements and possible sponsorship during your study. The degree programme is reviewed annually with input from our industrial partners to ensure that the modules taught are at the cutting edge and reflect the current state of the industry.

State-of-the-Art Facilities

The teaching of our degree programmes has recently received major investment in the provision of state-of-the-art teaching laboratories, enabling students to experience the latest in industrial standard test equipment and software.

Career Prospects

Students graduating from Cardiff in Electrical and Electronic Engineering have excellent career prospects. The School has strong links with all the major employers in this area and well qualified graduates are much in demand.

Programme Structure

We also offer an MEng International programme which enables students to spend a semester studying at a university abroad.

Level One

The first year is common for all combinations of our degree programmes and provides you with fundamental analytical, computational and experimental skills.

Modules you will study include:

- ▶ Mathematics
- ▶ Digital and Analogue Electronics
- ▶ Electromagnetics and Circuits
- ▶ Materials
- ▶ Telecommunications
- ▶ Power Engineering

You will also study information technology, professional engineering studies and develop oral and written communication skills.

Level Two

The second year, also common for all programmes, extends study of the core subjects and introduces you to:

- ▶ Microprocessors and Instrumentation
- ▶ Control Engineering
- ▶ Software Engineering
- ▶ Engineering Management
- ▶ Power Systems Analysis and Machines
- ▶ EM Fields and Transmission Lines

There is also an option to study French, Spanish or German.

Level Three

At this point in the degree programme, you will be in a position to develop the technical breadth, depth and flexibility required in today's multidisciplinary technical environment. It is here that the research-led nature of our programmes will allow you to specialise in a specific area of Electrical and Electronic Engineering. (Industrial placements take place after your second year of study.)

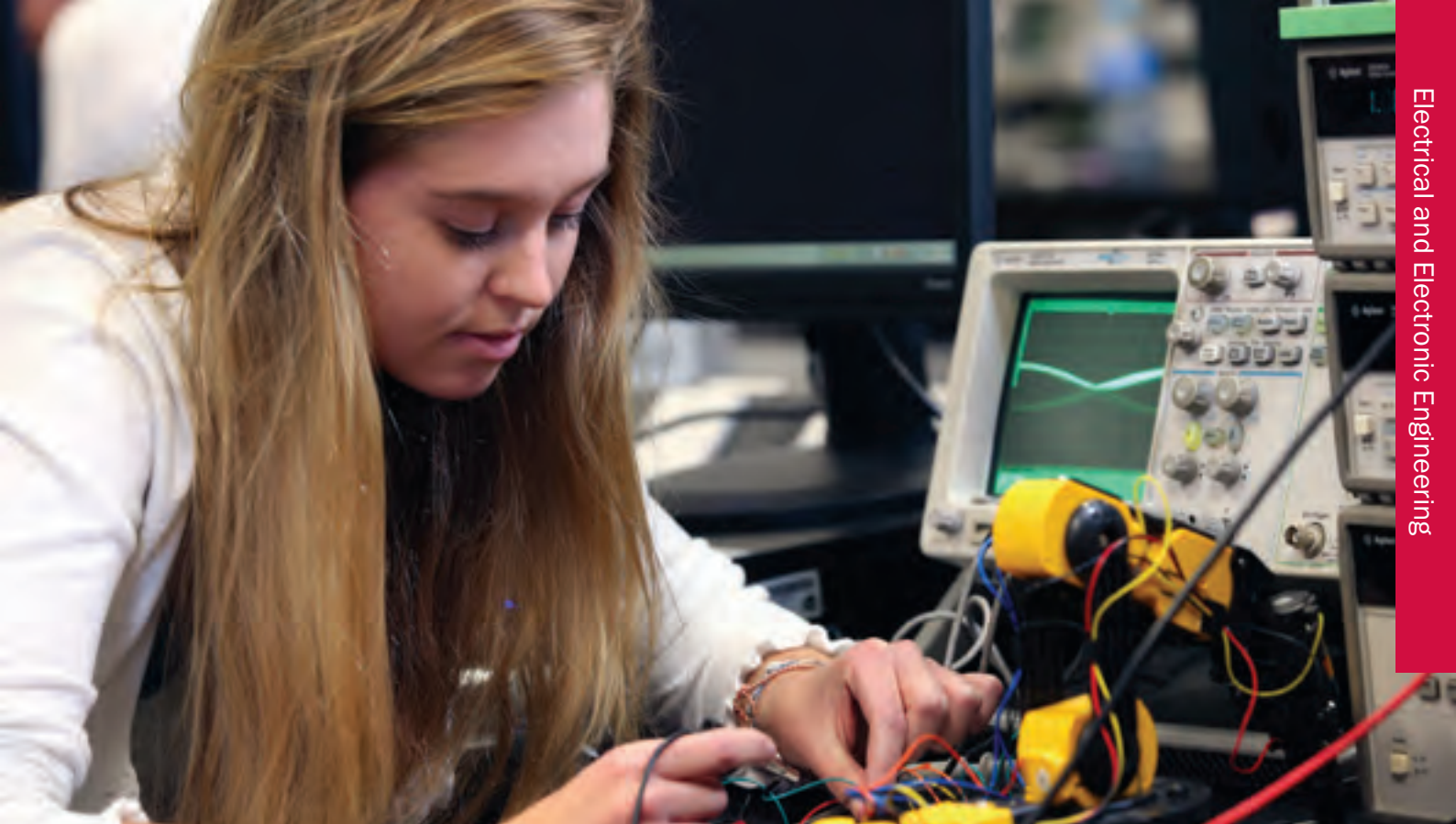
Advanced modules at level three include:

- ▶ Electrical Machines and Drives
- ▶ HF and RF Engineering
- ▶ Automatic Control
- ▶ Power Electronics

Specialities in this area include CAD of power systems, high voltage engineering and machines and drives.



Students are given access to state-of-the-art equipment



Classes take place in the newly refurbished Electrical Machines Laboratory

For all programmes at level three, you will participate in a major individual project spanning the two semesters. Students are encouraged to become involved in research and industry-led projects in their chosen area of focus.

Level Four (MEng Programmes Only)

The final year of the MEng programme is designed to cover an enhanced depth and breadth of technical coverage as prescribed by the IET professional body.

Level four modules available to this programme include:

- ▶ Advanced Power Electronics and Drives
- ▶ Advanced Power Systems and High Voltage Technology
- ▶ Alternative Energy Systems
- ▶ Management in Industry



Cardiff University is one of the few universities in the UK which are members of both the UK Electronics Skills Foundation (UKESF) and the Power Academy. These organisations have been established to address the skills shortages in these areas.

They provide assistance with the cost of study through scholarships and professional development opportunities for students in Electrical and Electronic Engineering related degree programmes. Please see conferences.theiet.org/power-academy for information about the Power Academy, and www.ukesf.org/scholarship-scheme for information about the UK ESF.

Further information:
www.cardiff.ac.uk/engineering

Contact:
Dr Sian Armstrong
Tel: 029 2087 9999
Email: engineering-ug@cardiff.ac.uk

Degree Programmes

MEng (Hons) 4 years full-time	H601
MEng (Hons) 4 year with a semester abroad (International)	H607
MEng (Hons) 5 years with a Year in Industry	H600
MEng (Hons) 5 years with a Year in Industry and semester abroad (International)	A7N3
BEng (Hons) 3 years full-time	H605
BEng (Hons) 4 years with a Year in Industry	H606

Accreditation

Institution of Engineering and Technology (IET)

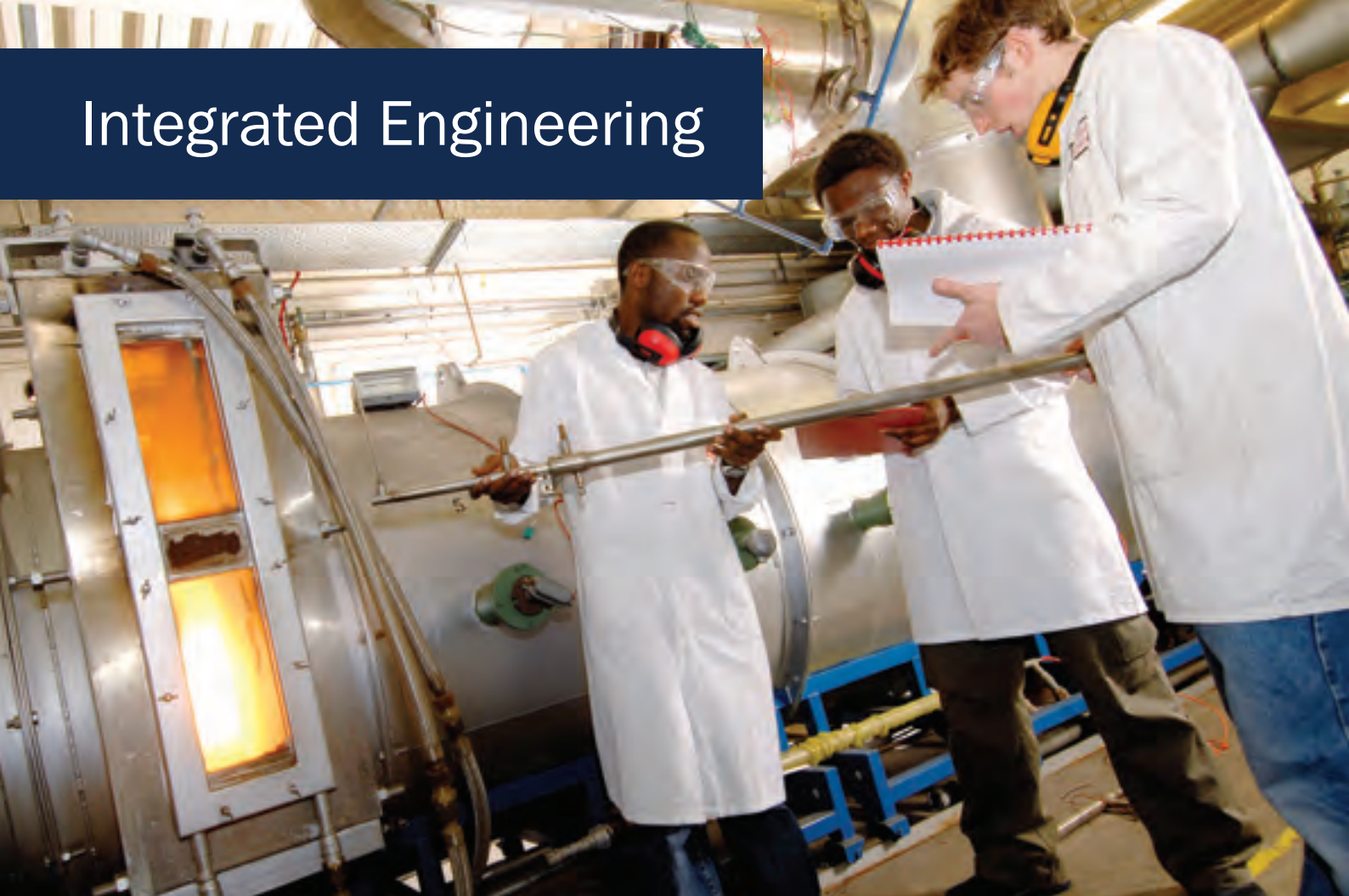
Entry Requirements

MEng: AAB-ABB at A-level.
Must include Mathematics.

BEng: ABB-BBB at A-level.
Must include Mathematics.

For the most up-to-date entry grades or for alternative entry requirements including BTEC, IB etc please consult the website: www.cardiff.ac.uk/study/undergraduate/courses/browse-by-school/school-of-engineering

Integrated Engineering



The Integrated Engineering degree is a broad-based engineering degree that embraces many aspects of electrical, electronic, mechanical and manufacturing engineering.

By choosing choosing to study Integrated Engineering you will qualify as an engineer of the highest quality: your broad knowledge of engineering will ensure that you can interact with engineers from all the traditional engineering disciplines in any multidisciplinary environment.

Integrated Engineering at Cardiff

Both MEng and BEng programmes are offered: both provide the engineering institutions' necessary academic standard to satisfy educational requirements for a Chartered Engineer, with the MEng offering the fast-track route to chartered status. The degree programmes are accredited by the Institution of Mechanical Engineers, the Institution of Engineering and Technology and the Energy Institute.

Level One

The programmes are designed to ensure the continuity and development of material through all the years of study. In addition, the strong collaborative links we have with industry means that you will benefit from relating your academic studies to the reality of industry.

The degree programmes are built around six primary themes that run through each year; the foundations are laid in the first year, strengthened in the second and supplemented by a number of specialised mechatronic modules at the end of Year Two.

The six themes are:

- ▶ Information Engineering
- ▶ Engineering Mechanics
- ▶ Electrical and Electronic Engineering
- ▶ Manufacturing Engineering
- ▶ Professional Engineering Studies
- ▶ Integrating Studies

In Information Engineering you will study topics such as mathematics, computing and data analysis, as well as the latest developments in this area, plus knowledge-based systems, which incorporate aspects of artificial intelligence and expert systems.

Professional Studies covers a range of topics, from real case studies with participating industrial partners through to law, accountancy and financial control in the final year. Since the objective of engineering is the development of an idea into a marketable product, you will learn the vital aspects of manufacturing systems technology and manufacturing management throughout your three or four years of study.

Industrial Collaboration

Industrial collaboration is vital to our degree programmes and we have a close association with a number of national and international companies. This collaboration takes many forms, such as sponsorship and industrial placement, as well as educational support through the provision of case studies and equipment. Through these links you will become familiar with a range of industries embracing materials, manufacturing, energy supply, component manufacture and advanced systems manufacturing. This collaboration and breadth of engineering knowledge will provide you with excellent job opportunities when you graduate, leading to a flexible choice of career.

All academic staff, many of whom are Chartered Engineers, have their own research interests and expertise, and many have worked for companies such as Rolls-Royce, ICI and Shell. Research at the School of Engineering is consistently recognised as being of a very high standard and although this may not seem of direct relevance to you entering as an undergraduate, a strong research base means that the programmes are closely integrated with industry and are at the leading edge of technology.



A student working on Unmanned Autonomous Vehicles



Cardiff University is one of the few universities in the UK which are members of both the UK Electronics Skills Foundation (UKESF) and the Power Academy. These organisations have been established to address the skills shortages in these areas.

They provide assistance with the cost of study through scholarships and professional development opportunities for students in Electrical and Electronic Engineering related degree programmes. Please see conferences.theiet.org/power-academy for information about the Power Academy, and www.ukesf.org/scholarship-scheme for information about the UK ESF.

Degree Programmes

MEng (Hons) 4 years full-time	H113
MEng (Hons) 4 years with a semester abroad (International)	H118
MEng (Hons) 5 years with a Year in Industry	H114
MEng (Hons) 5 years with a Year in Industry and semester abroad (International)	5A7D
MEng (Hons) 5 years with a Year in Europe	H115
BEng (Hons) 3 years full-time	H110
BEng (Hons) 4 years with a Year in Industry	H111

Accreditation

Institution of Engineering and Technology (IET)
Institution of Mechanical Engineers (IMechE)
Energy Institute (EI)

Entry Requirements

MEng: AAA-AAB at A-level.
Must include Mathematics.

BEng: AAB-ABB at A-level.
Must include Mathematics.

For the most up-to-date entry grades or for alternative entry requirements including BTEC, IB etc please consult the website: www.cardiff.ac.uk/study/undergraduate/courses/browse-by-school/school-of-engineering

Further information:
www.cardiff.ac.uk/engineering

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Mechanical Engineering



Mechanical Engineering is the creative application of science and expertise to the design, construction and operation of products and processes. Mechanical Engineers combine imagination with modern technology to offer innovative solutions to meet the complex requirements of society and industry.

In all industrial sectors, Chartered Mechanical Engineers develop well-designed products, manufacture them by efficient processes and sell them skilfully on world markets.

Mechanical Engineering at Cardiff

Our MEng and BEng degrees are accredited by the Institution of Mechanical Engineers and the Energy Institute, allowing smooth career progression to professional status after you obtain your degree. The quality of our programmes means that we attract well qualified students.

All academic staff have their own research interests and expertise, and many have worked for companies such as Rolls-Royce, ICI, and Shell. Research within the School is consistently recognised as being of a very high international standard, and although this may not seem of

direct relevance to you entering as an undergraduate, a strong research base means that the programmes are closely integrated with industry and are at the leading edge of technology.

If you choose to study at Cardiff, we will make every effort to ensure that you enjoy all aspects of your student life, and that you leave having fulfilled your academic potential.

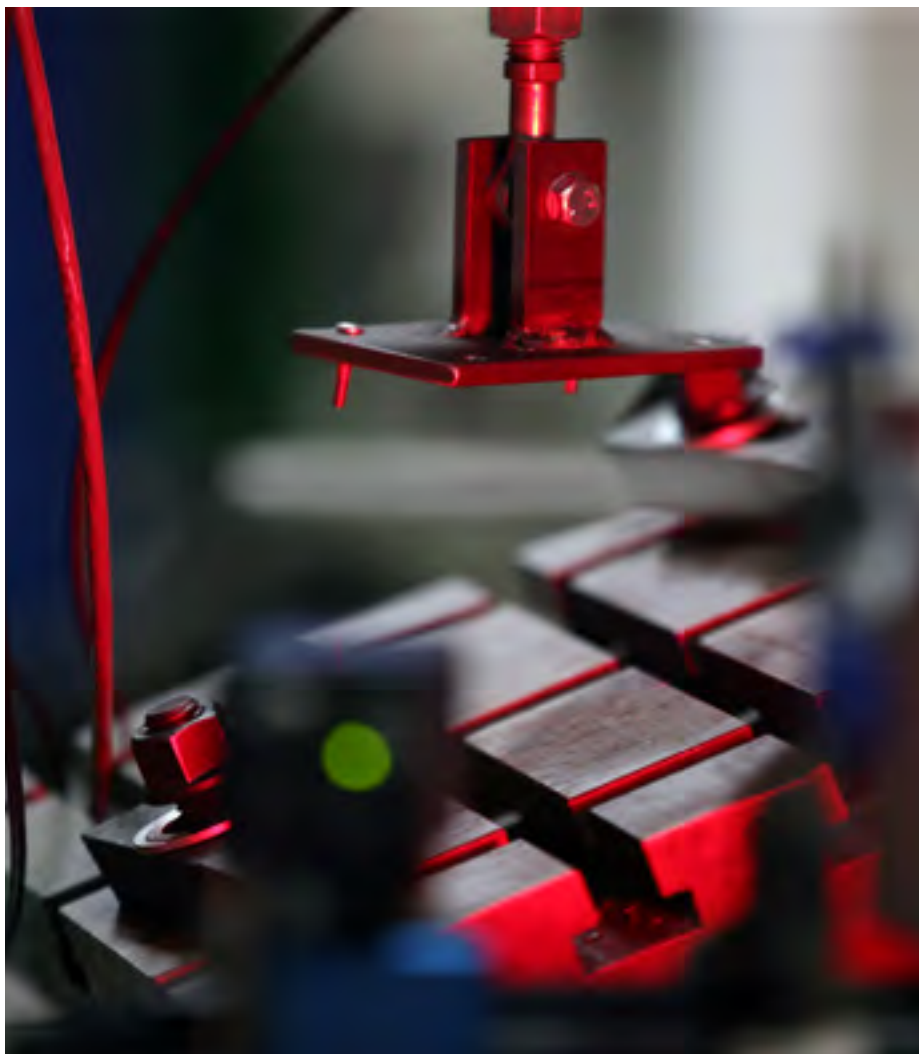
Employment

Employment prospects for Mechanical Engineers from Cardiff are excellent, with recent statistics indicating that the vast majority are following chosen career paths within six months of graduating. A substantial number of graduates work in product design for the automotive, aeronautical, communications and energy industries. Some are employed in medical engineering, others are travelling the world for the petrochemical industry, whilst some are involved in

development, production and general management. A few choose to use their degrees as a qualification to enable them to work in other disciplines. Those who have followed this route typically work in the Forces, the financial sector, the legal profession, chartered accountancy or computing. With such high calibre and broad opportunities, a career in Mechanical Engineering is varied, challenging and rewarding.

Programme Structure

The Mechanical Engineering degree programme at the School of Engineering is designed to give maximum flexibility whilst providing a broad-based engineering education of the highest standard. Modules employ a variety of assessment methods: coursework, continuous assessment and examination. In Years One and Two, students develop a thorough understanding of the basic mechanical disciplines of dynamics, fluid



mechanics, thermodynamics, design, materials, solid mechanics, statics and control. These modules are supported by studies in mathematics, computing, electrical engineering, manufacturing and professional engineering studies. Design projects and laboratory exercises provide students with the opportunity to practise and integrate all the skills learned.

Cardiff is one of the few traditional universities which offers a sandwich programme. On this programme, students spend their third year gaining industrial experience, which enhances the relevance of the teaching in the final years. Students receive a full salary during their industrial placement.

In the third year of the BEng programme, in addition to the basic elements, a wide range of specialist subjects such as tribology, energy studies, machines or further language studies are offered as options.

Students choose modules according to their particular requirements. At this stage, design remains an important aspect of the degree programme structure.

Another important element in this year is the individual project, which can be design, research or industrially based.

Students undertake an individual project in which they research, manage and present a report for assessment. Whilst we encourage students to take ownership of their projects, an academic supervisor is nominated to provide guidance and encouragement.

In the third and fourth year of the MEng programme, students follow more specialist options in such areas as robotics, expert systems, bioengineering, energy management and risk/hazard assessment. Group design projects and assignments are also undertaken to provide breadth of training in a range of disciplines important to industry, including project management, problem solving and decision making, as well as analytical design at the highest level.

A number of our fourth year group projects are multidisciplinary. You will work alongside engineering students from across the School on real engineering projects.

Degree Programmes

MEng (Hons) 4 years full-time	H302
MEng (Hons) 4 years with a semester abroad (International)	H309
MEng (Hons) 5 years with a Year in Industry	H307
MEng (Hons) 5 years with a Year in Industry and semester abroad (International)	USA6
MEng (Hons) 5 years with a Year in Europe	H308
BEng (Hons) 3 years full-time	H300
BEng (Hons) 4 years with a Year in Industry	H301

Accreditation

Institution of Mechanical Engineers
Institute of Energy

Entry Requirements

MEng: AAA-AAB at A-level.
Must include Mathematics.

BEng: AAB-ABB at A-level.
Must include Mathematics.

For the most up-to-date entry grades or for alternative entry requirements including BTEC, IB etc please consult the website: www.cardiff.ac.uk/study/undergraduate/courses/browse-by-school/school-of-engineering

Further information:
www.cardiff.ac.uk/engineering

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Medical Engineering



Medical Engineering is a relatively new area of undergraduate study. The Cardiff degree course is one of the most established in the UK, designed to appeal to students who wish to combine classical engineering training with a medical application.

Medical Engineering

Students benefit from teaching by a dedicated team of research-active academic staff, in addition to receiving lectures by colleagues from the School of Biosciences, School of Medicine and Cardiff and Vale NHS Trust. The aim of the programme is to produce a highly competent engineer who can pursue a career in clinical engineering, bioengineering or engineering fields outside medicine.

Employment Opportunities

Graduate medical engineers benefit from employment opportunities within both the medical engineering and also broader mechanical engineering sector. Recent Cardiff University graduates are now employed in medical engineering companies including Finsbury Orthopaedics, DePuy International, and Huntleigh Medical. Medical engineers can also pursue a career in the healthcare sector. Cardiff graduates regularly earn positions in the highly competitive Clinical Engineer/Scientist training scheme (visit www.ipem.org.uk for further details), whilst other students have used their degree as a precursor to other vocations.

Numerous opportunities are also available worldwide for postgraduate study, with many graduates having since been awarded a Doctor of Philosophy (PhD). Students have also sought further specialisation by studying for a Master of Science (MSc) qualification. Graduating with an IMechE accredited degree also allows students to work within the mechanical engineering sector. Graduate engineers are highly numerate and are therefore sought after in a number of other fields such as accountancy, finance, government and education, so for those who wish to pursue a career pathway away from engineering there are a range of other exciting opportunities.

Programme Structure

Each academic year consists of modules, the content of which summates to 120 credits; 60 credits are delivered in each semester.

Years One and Two

Year One aims to ensure that students develop a fundamental knowledge of all relevant subjects. Theory is delivered within lectures and is supported by a dedicated double-module of laboratory

experiments that comprises one-sixth of the year. Year Two begins applying engineering knowledge to medical applications, while further developing the fundamental theories learnt in year one. Additionally, dedicated Anatomy and Physiology modules are delivered in both years to ensure the students have sufficient breadth and depth of knowledge.

Year in Industry

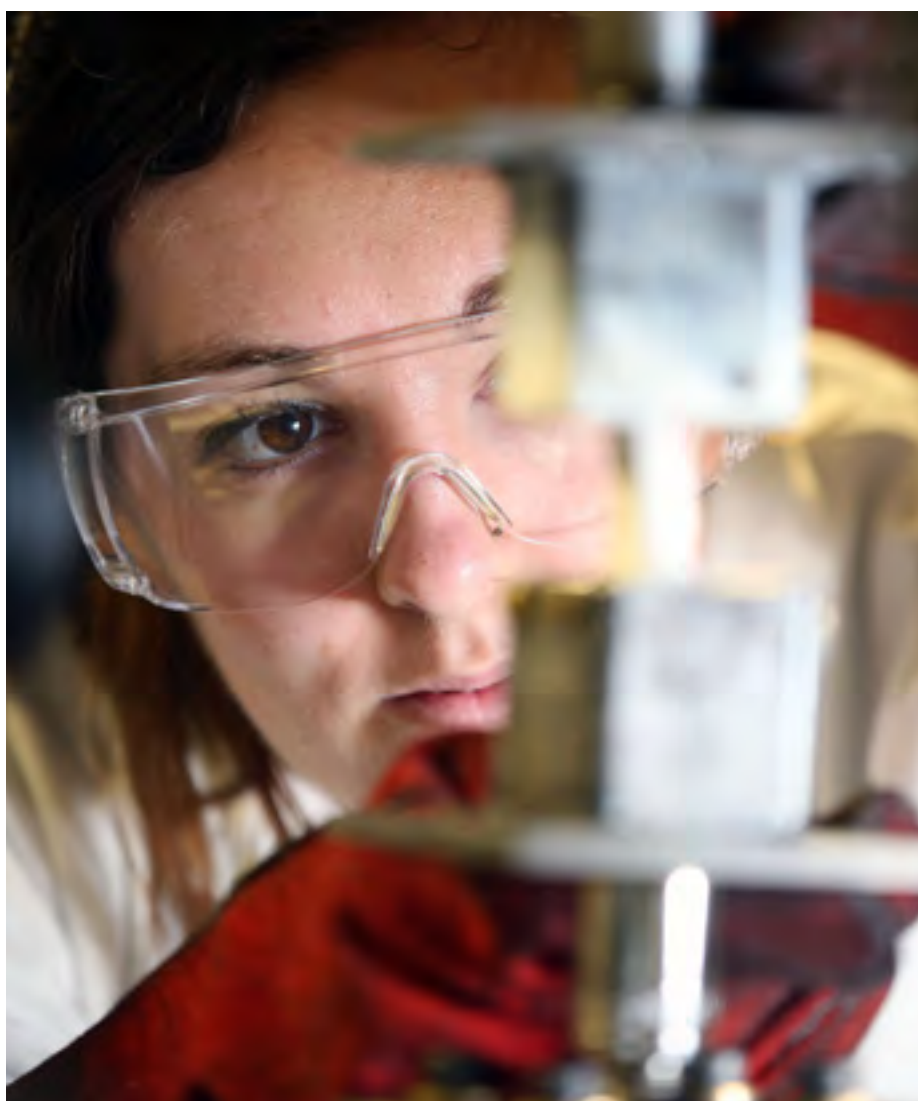
The Year in Industry scheme allows students to work in a salaried post within a company for approximately 12 months; this happens between years two and three, with the student gaining skills that may lead to the awarding of a City & Guilds qualification. The University actively assists students in searching for such a position, with collaboration established with national and multinational medical engineering companies, including Biomet, Arup, Huntleigh Technology, Gyrus Medical and Finsbury Orthopaedics. Opportunities also exist for summer placements.

Year Three

Year Three is structured around providing students with the opportunity to integrate their medical and engineering knowledge, as they tackle a number of realistic clinical challenges throughout a variety of applied modules. Twenty five per cent of this academic year is also devoted to the Individual Project, where students select an area of research interest and then conduct a period of guided study. Recent projects have included: Linking Brain Imaging with Motion Analysis; Computational Modelling of Blood Flow in Cerebral Aneurysm; Football Injuries from Collision with the Ground; Biomechanical Analysis of Shaken Baby Syndrome.

Year Four

One-half of Year Four involves working within groups to tackle two substantial medical engineering research projects. A number of specialist medical engineering modules (eg sports biomechanics, forensic engineering) are also delivered that are aligned with key research interests of academic staff.



Research Activities

Medical engineering staff within the School of Engineering are engaged in a broad range of research activities that supplement their teaching commitments. Some recent key activities include:

- ▶ The award of a £2million research grant from Arthritis Research UK
- ▶ The establishing of cross-disciplinary research groups in: Paediatric Biomechanics; Skin; Shoulder Biomechanics; Tissue Engineering and Repair
- ▶ Sports biomechanics research in partnership with professional athletes
- ▶ Presentation of research at major national and international conferences

The integration of research into teaching ensures that Cardiff students graduate at the forefront of medical engineering, thus maximising their potential employability.



A sports biomechanics project, investigating head impacts on artificial turf

Degree Programmes

MEng (Hons) 4 years full-time	H1BV
MEng (Hons) 4 years with a semester abroad (International)	H2BV
MEng (Hons) 5 years with a Year in Industry	HB99
MEng (Hons) 5 years with a Year in Industry and semester abroad (International)	P2R4
BEng (Hons) 3 years full-time	H1B8
BEng (Hons) 4 years with a Year in Industry	BH99

Accreditation

Institution of Mechanical Engineers (IMechE)

Entry Requirements

MEng: AAA-AAB at A-level.
Must include Mathematics.

BEng: AAB-ABB at A-level.
Must include Mathematics.

For the most up-to-date entry grades or for alternative entry requirements including BTEC, IB etc please consult the website: www.cardiff.ac.uk/study/undergraduate/courses/browse-by-school/school-of-engineering

Further information:
www.cardiff.ac.uk/engineering

Contact:
Dr Mark Eaton
Tel: 029 2087 9999
Email: engineering-ug@cardiff.ac.uk

Frequently Asked Questions





What are the Differences between MEng and BEng Degree Programmes?

The direct answer would be: one extra year of study. The accredited MEng degree completely fulfils the academic training requirements section required en route to becoming a Chartered Engineer. The modules delivered on the final two years of the MEng programme are at a higher level than those on the BEng programme, in terms of there being more research-based elements, more management based aspects, a higher level of technical content or a combination of these.

How Easy is it to Transfer from a BEng to an MEng Degree Programme?

The transfer is very easy if you perform well: you will need to attain a 60% average mark for your Year One and Two assessments. Every aspect of your education will have been identical to that of MEng students up until this stage, and if you meet the 60% target you will be encouraged to move onto the MEng programme. However, if you find that your career aspirations suggest that a move from an MEng to a BEng programme would be appropriate, this can also easily be arranged.

What A-levels Do I need to Study Engineering?

The School requires a Mathematics A-level or equivalent plus a minimum of two additional A-levels which may include a range of subjects. Subjects such as Physics and Further Mathematics are valuable but we would accept any A-level subjects such as Psychology or History, but we do not accept General Studies.

Will I be Interviewed?

Our general policy is to invite all our applicants who live within a reasonable travelling distance from Cardiff to visit the School, meet staff and students and talk to the relevant admissions tutors. In this way we hope you can then make an informed choice of where you want to study.

Does the University find a suitable Industrial Placement for My Year Out?

We will help you to find a placement through our strong industrial links, and list of approved companies. However, you will be also free to seek your own contacts to ensure that the best match is made between your aspirations and the company's business. Before you begin your placement year you will be offered advice and guidance on putting together your CV, and other activities that will help you in the corporate world.



How will I Be Funded During my Year in Industry?

You will be paid directly by the company. The average salary per year for students currently working in industry is £15k, though some companies offer as much as £20k. Sometimes the companies offer students some form of sponsorship on their return to University.

What Entry Qualifications Do I Need to Spend a Year in Europe?

You do not need to be totally fluent in French, German or Spanish to apply to the year in Europe degree. You will have the opportunity to improve your fluency through language modules in the first 3-years of your degree. You do, however, need a basic knowledge of the appropriate language, for example, a minimum of a grade C at GCSE in the appropriate language for your chosen country.

Notes for International Students



All applications for undergraduate programmes of study at Cardiff must be made through UCAS (www.ucas.ac.uk). You will be able to obtain information on how to apply and on the suitability of your qualifications from either:

- ▶ Your local British Council
- ▶ Your school/college
- ▶ The University's local education advisor

Cardiff University International Educational Advisors

The International Office works in co-operation with local educational advisors in a range of countries. These can provide students with a local source of assistance when applying to study at Cardiff. We have advisors based in a large number of countries.

Full details are available at: www.cardiff.ac.uk/international

Support for International Students

Coach Collection Service and Induction Programme

The International Office provides a coach collection service and induction programme for international students during the week before enrolment. The coach collection service, which runs over two days, picks up new students from Cardiff and Heathrow airports and drops them off on campus.

The Induction Programme which follows includes an Information Fair, social gatherings and guided tours to local attractions. The programme is designed to help new international students feel

at home quickly, make new friends and deal with any initial difficulties.

For further details see: www.cardiff.ac.uk/international/arrive

English Language Programmes

The English Language Programmes office provides courses to prepare overseas applicants for degree programmes and then supports them during their academic studies. Language and study skills courses are offered year-round for periods from a few weeks to a full year to improve your level of general and academic English.

The English for University Study Programme

This is a full-time course for European and overseas applicants considering, or intending to enter, Cardiff University or another UK university for undergraduate or postgraduate studies. The programme provides each student with the skills and language needed for a smooth transition into academic study. A strong performance in the programme's exit test is accepted for entry to undergraduate and postgraduate study at Cardiff University.

Students on the English for University Study Programme receive a range of free services subject to availability:

- ▶ Counselling on applying to Cardiff University
- ▶ Opportunities to visit University schools
- ▶ Reference use of University libraries
- ▶ Use of University computer workstations

Pre-Sessional English

The Pre-Sessional English course is a full-time, intensive summer English language programme specifically designed for international students holding offers from Cardiff University.

Full details of all our courses are available at: www.cardiff.ac.uk/elt

Examination Centre

Cardiff University is an official IELTS examination centre. Full details of all the courses, including dates and fees, and IELTS examination dates, are available on request from:

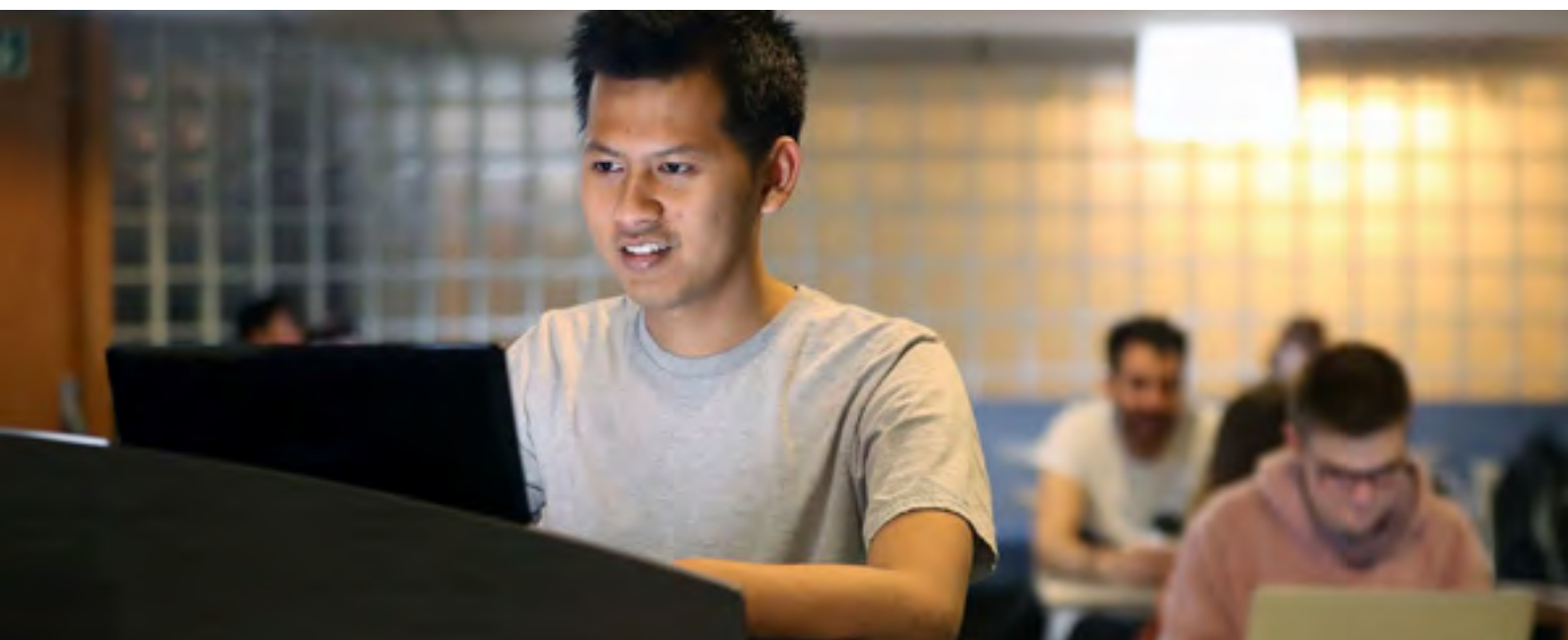
Email: ielts@cardiff.ac.uk
Tel: +44 (0)29 2087 9156
Web: www.cardiff.ac.uk/ielts

English Language Requirements

If you are an applicant whose first language is not English you will need to prove you have a standard of written and spoken English which enables you to benefit fully from lectures, seminars and tutorials.

If you need further information, please contact:

The Engineering Admissions Office
Email: engineering-ug@cardiff.ac.uk
Tel: +44 (0)29 2087 4656



English Language Programmes provide courses to prepare overseas applicants for degree programmes and then supports them during their academic studies

Admissions

To be considered for entry onto the course you should apply online via the UCAS website using the 'UCAS Apply' facility.

To use this facility you need to log on to: www.ucas.ac.uk/apply

The website will provide you with information on how to apply and explain the procedure. Applications should be made by 15 January.

After we have received and considered your application, we may invite you to visit the School sometime during the period November to early March. There will not be a formal interview, but there will be a guided tour of the School, and the city. You will meet students and staff, providing us with the opportunity of getting to know more about you and enabling you to find out what life is like as an engineering student at Cardiff.

Typical number of places available in the first year: **280**

Typical number of applications: **2,500**

Equal Opportunities

Cardiff University is committed to promoting equality and diversity in all of its practices and activities, including those relating to student recruitment, selection and admission. The University aims to establish an inclusive culture which welcomes and ensures equality of opportunity for applicants of all ages, ethnicities, disabilities, family structures, genders, nationalities, sexual orientations, races, religious or other beliefs, and socio-economic backgrounds. This commitment forms part of the Equality and Diversity Policy which is available at:

www.cardiff.ac.uk/cocom/equalityanddiversity/index.html

Applicants with Disabilities/Specific Needs

All offers to study at Cardiff University are made solely on the basis of academic merit. Where applicants have specific requirements that relate to a disability or medical condition, they are encouraged to discuss these with relevant staff in order that appropriate arrangements can be made to ensure the University provides an accessible environment. Specifically, applicants are invited

to contact the Disability Adviser who can provide information about the applications procedure, course delivery and access to the physical environment. Where appropriate, informal visits can be arranged in which applicants can view accommodation and meet academic staff.

The Disability Adviser can be contacted at:
Student Support Centre
50 Park Place, Cardiff CF10 3AT
Tel/Minicom: **+44 (0)29 2087 4844**
Email: studentsupportcentre@cardiff.ac.uk

Notes for Welsh Language Applicants

We recognise that if you are a Welsh speaker you may feel more comfortable speaking to a Welsh speaking personal tutor. Provided there are Welsh speaking members of staff in your subject area, every effort will be made to allocate a Welsh speaker to you. If you wish, you can also submit your assessed work and take your examinations through the medium of Welsh, regardless of the language of tuition of the course you are following. Some of the accommodation at Talybont and Senghennydd Court student residences has been allocated for Welsh speakers and learners who would like to be grouped together. If you would like to take advantage of this please make a note of this in your application for accommodation.

Open Days

The School of Engineering takes an active part in the annual University Open Days which take place throughout the year. During this day you can visit the School and see for yourself what studying at Cardiff will be like.

You can visit our lecture theatres as well as our modern and well-equipped laboratories and libraries. You will also be able to see the general facilities offered by the University, including the Students' Union, a number of Halls of Residence and the sports and social facilities which make Cardiff a great place to study. You will have the opportunity to talk to staff and students who will be able to answer any specific questions you may have relating to the admissions procedure, the various opportunities for European studies, the sport and recreational activities, the computing and library facilities, etc.

If you would like any further information on the Open Day you should contact:

Schools' and Colleges' Liaison Office

Tel: **+44 (0)29 2087 4455**

Fax: **+44 (0)29 2087 4457**

Email: openday@cardiff.ac.uk

Web: www.cardiff.ac.uk/opendays

For further information

Telephone: **+44 (0)29 2087 4656**

Fax: **+44 (0)29 2087 5902**

Email: engineering-ug@cardiff.ac.uk

Web: www.cardiff.ac.uk/engineering

Tuition Fees and Financial Assistance

The University charges an annual fee which covers all tuition fees, registration and examinations other than the re-taking of examinations by applicants not currently registered. Please note charges for accommodation in University Residences are additional.

Please see the following website for more information: www.cardiff.ac.uk/fees

Scholarships and Bursaries

For more information please visit the following website:

www.cardiff.ac.uk/scholarships

Useful Websites for Information About Tuition Fees and Financial Assistance:

Cardiff University website:

www.cardiff.ac.uk/fees

Student Support Centre website:

www.cardiff.ac.uk/studentsupport

DfES Student Support web pages:

www.dfes.gov.uk/studentsupport/

Welsh Assembly Student Finance web pages:

www.studentfinancewales.co.uk

Student Finance England web pages:

www.studentfinanceengland.co.uk

Student Loans Company web pages:

www.slc.co.uk



There are a range of opportunities to visit the University



Key

- School of Engineering
- University and NHS Buildings
- Student Residences

Terms and Conditions

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Tel: 029 2087 4455

Email: RobertsL9@cardiff.ac.uk

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How to find the School

You will find us located in the Queen's Buildings on Newport Road (entrance via the Parade). We are conveniently situated close to the city centre, student halls of residence, and to all of the main University buildings, including the Students' Union.

Please also see our website at: www.cardiff.ac.uk/engineering and find us on:

- [Facebook.com/cardiffschoolofengineering](https://www.facebook.com/cardiffschoolofengineering)
- [Twitter.com/@engineeringCU](https://twitter.com/@engineeringCU)
- [Youtube.com/user/cardiffengineering](https://www.youtube.com/user/cardiffengineering)



To find out more about the School of Engineering, please visit our website: www.cardiff.ac.uk/engineering

Student Bloggers

From study tips to where to eat, to societies, weekend trips and where to get your books, our student bloggers are real students talking about the reality of being a student at Cardiff.

Don't miss their latest blogs for the chance to find out more about what it's like to study and live in Cardiff.

www.cardiff.ac.uk/studentbloggers

Enquiries

Tel: 029 2087 9999
Email: engineering-ug@cardiff.ac.uk

School of Engineering
Cardiff University
Queen's Buildings
The Parade
Roath
Cardiff CF24 3AA

Stay in touch



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[schoolofengineering](https://facebook.com/schoolofengineering)



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[@EngineeringCU](https://twitter.com/EngineeringCU)



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