Engineering
UNDERGRADUATE STUDY 2017
Contents

About us
Welcome 02
School of Engineering 04
Campus life 06
Careers 08
Being a Chartered Engineer 11
Our courses 14
MEng electives 16
Applying to us 34
Find out more 36
Our courses

Automotive Engineering 18
Civil Engineering 20
Electronic Engineering 22
Engineering (general) 24
Manufacturing and Mechanical Engineering 26
Mechanical Engineering 28

Engineering Business Management 30
Engineering and Business Studies 31
Computer Systems Engineering 32
Welcome from the School of Engineering

Climate change, accelerated urbanisation, stretched health resources: these are the kinds of global challenges that integrated engineering is helping to solve – and you could be part of those solutions.

Do you like the sound of launching satellites into space or designing zero-carbon homes down here on earth? Could you see yourself building racing cars or perfecting rescue robots? Studying engineering at Warwick will give you access to some of the world’s best academics and researchers who will help equip you for a wide range of career opportunities.
Flexible degree options

Our Engineering degrees are structured to allow you maximum flexibility: all degrees in the School of Engineering share the first two years*, with a wide array of optional modules available. This is to give you time to experience different engineering disciplines before choosing whether to continue as a general engineer or to specialise, and also whether to study to BEng level or - if you meet the academic requirements - to continue on to MEng. Having this flexibility allows you to tailor your degree to your evolving interests and career plans.

If you choose to concentrate on a specific area, such as automotive or civil engineering, the title you graduate with will reflect this, which can help you stand out to employers in those fields.

If you carry on to study for a fourth year for an MEng qualification, you can also choose to specialise in one of our ‘electives’ - see page 16. And if you decide that you are more interested in the business or management side of engineering, our BEng Engineering Business Management and BSc Engineering and Business Studies are jointly taught with Warwick Business School.

Through the partnership between the School of Engineering and WMG (Warwick Manufacturing Group), our unified teaching approach enables you to excel in the technical, social and commercial skills needed to design the products, processes and services that will improve people’s lives.

Project work

The projects you work on across the course of your degree give you the opportunity to collaborate with other engineering students, helping you to acquire advanced skills that you can take into the workplace. They also give you the opportunity to meet a wide array of students and form friendships.

As you progress through your degree, you’ll be able to use an impressive range of research facilities, workshops and laboratories with cutting-edge equipment.

* This does not apply to the BEng and MEng in Computer Systems Engineering, which is hosted by the Department of Computer Science.
School of Engineering

Pioneering non-invasive procedures to detect cancer; building the world’s first totally sustainable F3 car; increasing performance of silicon photovoltaics to provide lower cost electricity; and proving a murder case using 3D scanning technology – these are just a handful of recent engineering breakthroughs made by Warwick academics.

The academics who will teach you work at the forefront of their subjects and are making internationally significant advances, so you’ll encounter the latest thinking and the most up-to-date knowledge while you study at Warwick. We were ranked 3rd overall among UK integrated engineering departments in the most recent Research Excellence Framework (REF 2014), and we are justifiably proud of our research-teaching links.

Industry links

Warwick is a great place for you to start your career as an engineer. Our Coventry location places you close to many of the UK’s biggest names in engineering, and the School has a long track record of working with the likes of Jaguar Land Rover, Arup and Rolls-Royce.

Groups like the Warwick Engineering Society (see page 07) can provide you with great career development ideas and access to industry experts.

Some companies also offer their own opportunities for you to get involved in research. For example, an eight-week summer internship scheme run by WMG (Warwick Manufacturing Group) gives Engineering undergraduates experience of working with global companies to develop solutions to real-world problems.

Your training and development doesn’t have to remain within the UK. Our international links make it possible for you to gain experience on a global platform, whether through our partnership with Monash University in Australia, or institutions in the US, Canada, China and across Europe.
World-class facilities

We’re continuously investing in our facilities, giving you access to expert staff and resources, allowing you to study to the best of your ability.

Warwick is currently creating a new £20 million teaching and learning building, which will house some of the finest teaching and learning resources available in the UK. The building, which is due to open in late 2016, will be a thoroughly social space, featuring innovative advanced technology.

Our University Library is an ideal base for any study, whether you prefer traditional individual study environments or spaces that encourage collaboration. It has access to over a million printed works and tens of thousands of electronic books and professional journals.

International students

Warwick provides a warm welcome to students from all over the world: there are around 6,400 international students from more than 145 different countries studying here. Our overseas students are offered a superb level of support through the University’s International Office who can give you all the information you need before choosing Warwick. It also runs a scholarship programme to assist students applying from overseas.

Scholarships

The School offers 20 merit scholarships, each worth £1,000, for gifted and talented students in their first year of study. This scholarship is open to all applicants who have made us their first (firm) choice.

For further details see: warwick.ac.uk/engineering/ug

The latest advice on potential funding opportunities for UK, EU and international students can be found online.

warwick.ac.uk/ug/studentfunding
Welcome atmosphere

Our campus is home to students and staff from many different backgrounds and from countries all over the world. It’s this inclusive and cosmopolitan atmosphere that gives Warwick its vibrancy and characteristic ‘buzz’. Warwick values the individuality of our students, so we provide an environment where you can be yourself and form long-lasting friendships. You may want to get involved in some of our many clubs and societies, but there are plenty of other ways to relax and socialise on campus.

Living on campus

Living on campus means you’re in easy reach of your lectures and all of our fantastic facilities. Standard single rooms range from £84 to £171 per week* and letting lengths differ between halls. All have wi-fi connectivity, so you can easily access the internet. *2016/17 fees. Prices are set each year; please check website for details.

Beyond study

With nearly 300 student societies and clubs, you have many opportunities to meet people, learn valuable skills and try new things.

The Students’ Union (SU) supports over 230 student-run societies plus 67 sports clubs – covering activities as diverse as juggling, cinema, Harry Potter, and cheese and chocolate appreciation – so there’s bound to be something for you. We also offer many ways to volunteer in the local community and further afield.

Visit the Students’ Union website for more information on the great opportunities available.

warwick.ac.uk/volunteers
warwick.ac.uk/warwickinafrica
warwicksu.com/societies/all/welfare

Everything you need is within easy reach on our campus – you will find shops, health care, cafés, plenty of entertainment options and a great nightlife.
Students’ Union
The Students’ Union runs a packed programme of events, including student-run gigs, karaoke, open mic nights and pub quizzes. For film fans, the Warwick Student Cinema Society screens around 150 films per year, and there is also a cinema at Warwick Arts Centre.

warwicksu.com/events

Engineering Society
The Engineering Society has more than 700 members and is run by students, for students. The Society also gives you great opportunities to meet new people at their socials, from club nights to sit-down meals, and by joining their sports teams.

They host two of the largest conferences at Warwick, and host weekly sessions for assignment-based help. Partner companies run workshops, including CV writing and interview techniques.

Our Outreach team organises fundraising events and visits to schools to promote studying Engineering. As well as a fantastic way of giving back to the community, this is also a great opportunity to develop the skills employers want to see on your CV.

warwickengineers.co.uk

The Engineering Society is part of Engineers without Borders UK (EWB), which runs a broad range of activities, including training workshops, outreach, talks, long-term projects, socials, and international placements.

ewb-warwick.org

WarwickTECH
WarwickTECH is a brand new society which brings together like-minded entrepreneurs to pursue STEM (Science, Technology, Engineering and Mathematics) related technical and innovative projects. The society aims to provide a platform for students to come together and share their ideas, through events such as workshops, Hackathons and guest speakers.

warwick-tech.co.uk

Temporary employment opportunities
There are many opportunities on campus for part-time and vacation work, including the Students’ Union, Warwick Arts Centre and Engineering open days. The University also has its own temporary employment agency for students and graduates.

unitemps.co.uk

Full details about campus life are available on the website:

warwick.ac.uk/ug

Accommodation guarantee
If you list us as your firm choice and have applied for accommodation online by 31 July 2017, you will be guaranteed a place in University accommodation for your first year.
Choosing Warwick will help you lay firm foundations for your career. Our degree is attractive to employers, both in the UK and internationally. Many sectors value the breadth of knowledge gained here, so as well as being a great start to a career in engineering, our degrees can also open doors to other careers such as banking and finance.

Coming to Warwick means you’ll be highly employable when you graduate. We are ranked 8th in the UK for our reputation with employers (QS World University Rankings 2015/16), who describe Warwick graduates as well motivated with a broad range of interests outside their academic studies.

Stand out from the crowd

Over 300 leading employers visit the campus each year to meet our students, and the value of a Warwick education is reflected in the high quality of job roles that employers offer to our graduates.

We are ranked as the 3rd most targeted university nationally by the UK’s top 100 graduate employers (The Graduate Market in 2016, High Fliers Research). The average salary of Warwick’s 2014 engineering graduates six months after finishing their degree was £25,400*. At 80%, we are among the top universities in the UK for percentage of graduates entering either professional or managerial jobs, or graduate-level study (all figures taken from The Times and The Sunday Times Good University Guide 2016).

Many of our graduates aim to go straight into full-time employment, and 93% of Warwick 2014 graduates were working, undertaking further study or both, six months after graduating. Others choose to develop their early careers through voluntary work, or take time out to travel.

* Derived from the HESA Destinations of Leavers from Higher Education survey, carried out approximately six months after successful completion of degree. Includes 2013/14 UK graduates studying their first degree.
Who employs our graduates?

Around 70% of our graduates find employment within engineering and IT sectors.

A further 10% are employed by accountancy firms, consultancies and investment banks because of their strong numeracy, interpersonal and team-working skills.

The remaining 20% of graduates find employment in a variety of sectors such as retail, the armed forces and teaching. Here are just a few of the companies employing Warwick engineers:

- Arup
- BAE Systems
- Jaguar Land Rover
- Morgan Sindall
- Rolls-Royce (Aerospace)
- Ericsson

For more information on being a Chartered Engineer, see: engc.org.uk
What makes Warwick graduates so employable?

Firm foundations

As well as building your subject knowledge, our degree courses enable you to develop key skills in independent and critical thinking, presentation and communication, research, leadership and organisation. Collaboration between our departments and employers also ensures that what you learn is relevant to today’s and tomorrow’s workplace.

Work experience

In 2015, recruiters estimated that around a third of entry-level positions would be filled by graduates who had already worked within their organisations, making Warwick’s links with employers even more valuable (The Graduate Market in 2016, High Fliers Research).

All our undergraduate students can arrange to apply their learning in a workplace or industry setting as part of their degree, or can even apply for a voluntary year out for work experience (subject to approval from the School). These include placements (which are usually year-long arrangements, designed to enhance your studies) and internships. Internships are shorter periods of on-the-job learning, which usually take place over vacations or after graduation.

Warwick work experience bursaries are available to support unpaid work and internships, and many students also gain experience through voluntary work.

Support to achieve your goals

It’s not just a case of ticking boxes on your CV. Your career path is unique to you, which is why our Student Careers and Skills team has developed ‘My Warwick Journey’ to help you develop your skills, think about your career and get experience. ‘My Warwick Journey’ encourages you to start thinking about your career aspirations from the moment you start your degree so that you can draw the most value from your entire student experience.

warwick.ac.uk/myjourney

You can access a range of support services from Student Careers and Skills at any point in your degree and for up to three years after graduation.
Being a Chartered Engineer

As an ambitious student, you will probably aspire to achieving Chartered Engineer (CEng) status. Being a Chartered Engineer demonstrates your professional expertise, and can improve your career prospects, employability and earning potential.

Chartered Engineers are officially registered with the UK’s Engineering Council. To achieve this status an engineer has to demonstrate the required competencies and commitment through education and professional experience. You must also be a member of a licensed professional engineering institution such as ICE, IET, IMechE or IStructE.

The popular route to reaching this goal is to complete a four-year accredited Master of Engineering (MEng) degree. Alternatively you can undertake an accredited Bachelor of Engineering (BEng) degree and complete additional training after graduation. All our specialist degrees are accredited by the relevant professional institutions for progression to Chartered Engineer status.
ENGINEERING DEGREE PROGRAMMES

- Automotive Engineering (BEng/MEng)
- Civil Engineering (BEng/MEng)
- Electronic Engineering (BEng/MEng)
- Engineering (BEng/MEng)
- Manufacturing and Mechanical Engineering (BEng/MEng)
- Mechanical Engineering (BEng/MEng)
- Engineering and Business Management (BEng)
- Engineering and Business Studies (BSc)

- Computer Systems Engineering (BEng/MEng)
  Department of Computer Science
Our courses

Our course structure has been designed to give you choice and flexibility and to meet the needs of employers, who want engineers with strong technical knowledge and the ability to understand and communicate in technical and business roles.

For the first two years all students (no matter which course they apply for) follow the same common content, meaning you will have until the end of second year to make your final choice about which type of engineering to specialise in. This gives you time to gain an understanding of each area. (The exception is the Computer Systems Engineering course, where you will specialise from day one.)

The MEng degree is a year longer than the BEng. The MEng and BEng courses are the same for the first two years, but different topics are covered in the MEng course from year three onwards. A quarter of the final year of the MEng is made up of a multi-disciplinary group project, which is unique to the MEng and not something that you would normally find as part of a one-year stand-alone Master’s course.

The advanced skills and knowledge that an MEng gives you can improve your job prospects in an increasingly competitive market. The MEng is also the premier route to achieving Chartered Engineer status (see page 11). This gives MEng students a head-start in their career development.

You can transfer onto an MEng course at the end of your second year if you meet the academic requirements - in fact we encourage all students who have met the requirements to transfer.

Entry requirements

Our typical A level offer for 2017 entry to degrees taught by the School of Engineering is:

- BEng/BSc: AAB
- MEng: AAA

These must include A level Maths and Physics.

The typical A level offer for Computer Systems Engineering is:

- BEng: AAA
- MEng: A*AA

These must include A level Maths.

These are typical levels, given for guidance purposes only; all applicants are given individual consideration. For more details see page 34.

Note: You must reach the required level each year to progress to the next year.
Year one
In your first year you will be taught the fundamentals of engineering, which you will be able to build on in future years as you begin to specialise.

Core modules
- Electrical and Electronic Circuits
- Design for Function
- Engineering Mathematics and Systems Modelling
- Professional Engineering Competences
- Introduction to Engineering Business Management
- Mechanics, Structures and Thermodynamics
- Foundation Mathematics (for those without A-level Maths)

Optional module
One of the following:
- The Aesthetics of Design
- Biomedical Engineering
- Multimedia Technology
- Technology in International Development
- Foundation Mathematics Module (for those with no higher level Mathematics)
- A Modern Foreign Language

Projects
You will undertake a range of small projects from ‘reverse engineering’ to design-and-make challenges on topics including: home automation; light rail transit; car aerodynamics; or intelligent robot vehicles. These projects introduce you to industry standard software such as SolidWorks and Dymola.

Year two
During your second year, you will build on your understanding of the multi-disciplinary nature of engineering products (like cars and bridges), and learn the language to communicate with the wide range of specialists you will work with in the future. A choice of design projects and an optional module will help you make your final decision on which area of engineering to specialise in. It is at the end of this year that you also make your final decision about whether to continue for a BEng or MEng degree.

Core modules
- Engineering Design
- Engineering Materials
- Energy Conversion and Power Systems
- Engineering Mathematics and Technical Computing
- Mechanics of Solids and Fluids
- Technical Operations Management

Optional module
One of the following:
- Computer Engineering and Programming
- Forensic Engineering
- Introduction to Secondary Teaching (Physics)
- Starting a Business
- Motor Vehicle Technology
- Systems Engineering Principles
- A Modern Foreign Language

Projects
As a second year student, you will extend your design knowledge by participating in a large group-based design-and-make task.

Year three
In your third year the course concentrates on providing specialist engineering knowledge, and on developing your research skills through an individual project. There is also an opportunity for some MEng students to spend their third year studying abroad. If you decide that you would rather be more business-focused, you can study our Engineering Business Management degree or Engineering and Business Studies degree, where you will study with Warwick Business School in year three.

Projects
You will undertake an individual project related to your degree, specialising in one particular area. This may be linked to our research activities, or be in conjunction with an external company, or support a fourth year group project.

Year four (MEng only)
In the fourth year of an MEng course you will study specialist material by selecting optional modules relevant to your chosen degree course. Students can also focus on a particular area of interest via your elective choice (see page 16). (NB This does not include students on the MEng in Computer Systems Engineering, which is taught in the Department of Computer Science and does not follow the elective system.)

Projects
MEng students participate in a large group project worth 25% of the year. We run more than 20 projects each year, which simulate the multidisciplinary working practices you will experience in your career. Students from all specialist courses work together on these projects.
MEng electives

We offer a choice of six electives, each comprising up to four modules, which are linked to areas of teaching and research expertise at Warwick.

If you complete the modules for an elective, it will be added to your degree title – e.g. MEng Civil Engineering with Sustainability. If you are planning a career in a particular area, having that area in your degree title can help you stand out from other job applicants. (The modules are available to be studied separately.)

You also have the option to extend your course and spend a year working in industry (‘intercalated year’) or in a research environment (‘year in research’), which may be added to your degree title instead.

You don’t need to formally apply for any of these options on entry – the final decision as to whether to take a placement year is made during the preceding academic year.

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<th>Elective options</th>
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<th>Robotics</th>
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**Business Management**
Career progression within the engineering profession will require you to become involved in planning and co-ordinating with other business functions such as purchasing, quality, marketing and finance. This planning and co-ordination is vital to ensure that the products meet the ever more stringent customer requirements. This elective is suited to students from any of the engineering disciplines.

The modules forming this elective are:
- Quality Systems
- Simulation of Operations
- Supply Chain Management

**Communications**
In recent years, the most significant improvements in our everyday life have been in the electronics field. Communications is the fastest growing sector of the electronics industry and offers tremendous opportunities and employment prospects. The Information and Communications Technologies research group at Warwick has worked on improving protocols for ad hoc wireless systems, analysis of the security of these systems, and on improving the design of optical antennas to capture infrared energy more efficiently than lenses.

The modules forming this elective are:
- Signal and Image Processing
- Information Theory and Coding
- Optical Communications Systems
- Antennas, Propagation and Wireless Communications Theory

**Fluid Dynamics**
Aerodynamics and computational fluid dynamics have applications throughout engineering – the design of car bodies and aircraft wings; modelling air flow within, and around, buildings; and even investigating...
the flow of dog food through pipes during production.

This elective draws on the research and teaching of Warwick's Fluid Dynamics Research Centre, one of the largest groups of its kind in the UK. The Centre promotes interdisciplinary research through the collaboration of engineers, mathematicians and physicists.

Not all modelling is computer based: the centre also builds equipment to conduct research. Knowing about the ideas behind the research will give you a head start for a career in many important industry sectors.

The modules forming this elective are:
- Advanced Fluid Dynamics
- Computational Fluid Dynamics
- Optical Engineering

**Robotics**

Robots are becoming increasingly sophisticated; soon they will no longer be confined to industry but will be mass-produced consumer goods. Robotics needs many different types of engineers working together to ensure a successful product: electronic engineers to create control systems for the robots; mechanical engineers to make them move; software engineers to develop their ‘intelligence’; and manufacturing engineers to develop the processes for creating the robots. This elective equips you with the necessary skills and know-how to pursue a career working towards creating new and better robots.

The modules forming this elective are:
- Advanced Robotics
- Dynamic Analysis of Mechanical Systems
- Simulation of Operations

**Sustainability**

Many modern industrial activities consume an enormous amount of natural resources and create large volumes of waste material, a situation that is no longer sustainable. All engineering disciplines are now concerned with minimising this waste and assessing the true cost of a project for the planet and for current and future generations. Many large companies have departments solely for this purpose.

Sustainable development is a key national and international policy that requires companies to minimise the environmental impact of their projects and to inform the initial design process. Research activities in the School of Engineering focus on three interacting areas: pollutant control, whole life cycle design, and resource and energy optimisation.

The modules forming this elective are:
- Design for Sustainability
- Fuels and Combustion
- Renewable Energy
- Fuels Cells and Fuel Storage

**Systems Engineering**

An autonomous mobile robot, the hybrid electric propulsion system in an automobile, the flight control system in a fly-by-wire aircraft, and human metabolic processes are all examples of complex engineering systems. Systems engineers are employed in the analysis, design, development and operation of systems. In contrast to experts in the traditional engineering disciplines, they take a holistic view of complex problems and propose technological solutions, including relevant factors in the surrounding environment and/or the whole product life cycle. Many are engaged in applying modelling and analytical techniques, supported by computational tools; decision-making and problem solving; and refining and testing new design concepts. Others act as technical consultants to senior management in support of strategic planning.

The modules forming this elective are:
- Automobile Systems, Dynamics and Control
- Simulation of Operations
- Biomedical Systems Modelling
- Mathematical and Computer Modelling
- Signal and Image Processing
- Advanced Control
- Quality Systems
- Dynamic Analysis of Mechanical Systems
- Healthcare Technology Engineering

**Intercalated year/year in research**

All BEng and MEng students have the opportunity to extend their course by a year, taking a year in either industry or research immediately before their final year of study. Our Careers Service can help you find a suitable placement. You submit a report at the end of your placement, which is assessed on a pass/fail basis only and does not contribute a mark towards the degree classification.
They highlight research breakthroughs such as the world-first Formula 3 environmentally friendly car, hybrid vehicles and ‘lightweighting’.

You will study core automotive modules alongside flexible optional modules, and will benefit from industrial visits and input from firms such as Jaguar Land Rover. There are also many opportunities for individual and group project work on topics such as gearbox analysis, examining energy storage such as in flywheels and batteries, and developing both electric and internal combustion-powered IMechE Formula Student racing cars.

You will build skills in research, design and innovation, communication, and leadership, and will adopt a multidisciplinary approach to solving engineering problems, allowing you to work in automotive and related sectors.

The BEng and MEng in Automotive Engineering are led by WMG (Warwick Manufacturing Group) and were developed in collaboration with industry leaders including Jaguar Land Rover, BMW and Ricardo.
Further information
www.warwick.ac.uk/H330
www.warwick.ac.uk/H335

Available MEng electives
(see page 16)

- Business Management
- Robotics
- Sustainability
- Systems Engineering
- Intercalated year
- Year in research

Course structure

Years one and two
All Engineering degrees share the same first and second years to give you a grounding in core areas of engineering.

You will be able to specialise in automotive engineering in your laboratory and design work, and optional modules in aesthetics of design and vehicle technology.

(see page 15)

Year three
Core modules
- Individual Project
- Automation and Robotics
- CAD/CAM and Simulation
- Design for Manufacture
- Design for Vehicle Safety
- Quality Techniques
- Systems Modelling and Control

Year four (MEng only)
Core modules
- Group Project
- Design for Vehicle Comfort

Optional modules
Five of the following:
- Advanced Robotics
- Automotive Materials and Processes
- Design for Sustainability
- Dynamic Analysis of Mechanical Systems
- Fuels and Combustion
- Fuel Cells and Fuel Storage
- Life Cycle Engineering for Manufacturing Systems
- Quality Systems
- Renewable Energy Systems
- Simulation of Operations
- Supply Chain Management
- Vehicle Propulsion

“I love my degree – studying general engineering in the first two years enables you to gain an insight into the various streams before deciding which one you want to focus on. As part of my fourth year project I did Formula Student which is potentially the coolest project there is – we got to build a single-seat racing car and race it around Silverstone!”

Stevie Gosling
Automotive Engineering
These accredited courses will give you a deep understanding of the fundamental principles of civil engineering, including design, sustainability and safety.

You will benefit from teaching founded on cutting-edge research, and will learn through theory and practical work. There are regular individual and group projects tackling industrial challenges. These might include designing, building and testing a roof structure, development of a robotic construction scheme, or helping Severn Trent to improve reservoir design. You may be able to take part in field courses, which in previous years have included geotechnical engineering work in Wales and an optional trip to Africa in the summer, to improve the well-being of villagers by installing water turbines to generate electricity.

Visits to construction sites and lectures from experts in industry provide insights into the latest civil engineering practices. You will develop a multidisciplinary approach to solving engineering problems, alongside skills in project management, communication and leadership, and the confidence to implement new technologies and optimise existing ones, equipping you for work across many industrial sectors.

Career destinations for Civil Engineers are in a diverse range of sectors such as structures, geotechnics, tunnelling and underground space, water engineering, transportation and energy. Graduates may work for civil engineering consultants and contractors.

Civil engineers are vital to our future national infrastructure and services.

Civil Engineering

BEng Civil Engineering
3 years | UCAS code: H200

MEng Civil Engineering
4 years | UCAS code: H202

Accrediting institutions:

Visits to construction sites and lectures from experts in industry provide insights into the latest civil engineering practices. You will develop a multidisciplinary approach to solving engineering problems, alongside skills in project management, communication and leadership, and the confidence to implement new technologies and optimise existing ones, equipping you for work across many industrial sectors.

Career destinations for Civil Engineers are in a diverse range of sectors such as structures, geotechnics, tunnelling and underground space, water engineering, transportation and energy. Graduates may work for civil engineering consultants and contractors.

Civil engineers are vital to our future national infrastructure and services.
Course structure

Years one and two
All engineering degrees share the first two years in order to build a solid foundation of understanding in core areas before you explore more specialised areas later in the course. *(see page 15)*

**Year three (BEng)**
**Core modules**
- Design Project with integrated Construction Management
- Geotechnical Engineering
- Concrete Structures
- Steel Structures
- Civil Engineering Materials and Structural Analysis
- Water Engineering for Civil Engineers

**Year three (MEng)**
**Core modules**
- Individual Project
- Geotechnical Engineering
- Concrete Structures
- Steel Structures
- Civil Engineering Materials and Structural Analysis
- Water Engineering for Civil Engineers

**Year four (MEng only)**
**Core modules**
- Group Project
- Construction Management and Temporary Works

**Optional modules**
Four of the following:
- Advanced Geotechnical Engineering
- Performance-based Seismic Design and Nonlinear Structural Analysis for Steel Buildings
- Structural Dynamics and Vibration
- Global Water and Sanitation Technologies
- River Mixing
- Design for Sustainability
- Finite Element Methods
- Quality Systems
- Renewable Energy
- Simulation of Operations
- Supply Chain Management
- African Field Course
- International Exchange Report
- Industrial report

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Available MEng electives *(see page 16)*
- Business Management
- Sustainability
- Intercalated year
- Year in research

**Further information**
www.warwick.ac.uk/H200
www.warwick.ac.uk/H202

We are constantly evolving our courses to keep up with developments in engineering and new requirements from industry, so the modules available, particularly in the later years of your course, are subject to change.
Our multidisciplinary, research-oriented approach to learning provides key skills that are aligned with best commercial practices – and much sought after by leading employers. Our graduates work in a variety of sectors, in addition to electronic engineering, such as design and production, energy, transport, the built environment, information and communications.

You will learn through lectures, tutorials, example classes, face to face contact with academics, a significant number of laboratories, coursework assignments and design projects. Our state-of-the-art laboratories are equipped with software and instruments to support your learning, as in the area of microcontrollers and field-programmable gate arrays in which the School benefits from close interaction with prestigious semiconductor manufacturers. Practical work in electronics starts from the first year; the third year individual project and the fourth year multidisciplinary group project are major parts of the degree programme. Recent projects, supported by industry, include an air quality sensor for a wearable device or mobile phone, power devices for a space application, the Warwick University Satellite project and the Warwick Mobile Robotics project.

Electronic Engineering

BEng Electronic Engineering
3 years | UCAS code: H610

MEng Electronic Engineering
4 years | UCAS code: H612

Our fully accredited Electronic Engineering degree programme provides not only specialist knowledge of electronic engineering, but also the ability to work in multidisciplinary teams.
Available MEng electives
(see page 16)

- Business Management
- Communications
- Intercalated year
- Year in research

Course structure

Years one and two
All engineering degrees share the first two years to give you a grounding in core areas of engineering and design.
(see page 15)

Year three
Core modules
- Individual project
- Analogue Systems Design
- Communication Systems
- Digital Systems Design
- Fundamentals of Modern VLSI Design
- Power Electronics
- Signal Processing

Year four (MEng only)
Core modules
- Group Project
- ASICs, MEMs and Smart Devices
- Power Electronic Converters and Devices

Optional modules
Four of the following:
- Advanced Robotics
- Antennas, Propagation and Wireless Communications Theory
- Biomedical Systems Modelling
- Dynamic Analysis of Mechanical Systems
- Information Theory and Coding
- Optical Communication Systems
- Quality Systems
- Signal and Image Processing
- Simulation of Operations
- Supply Chain Management

Further information
www.warwick.ac.uk/H610
www.warwick.ac.uk/H612

We are constantly evolving our courses to keep up with developments in engineering and new requirements from industry, so the modules available, particularly in the later years of your course, are subject to change.

“I have been involved in a project to design and build a University of Warwick satellite and my group is producing a working prototype. Eventually this will be launched and it will be fascinating for me to see my work in space in a few years’ time.”

Rich Young
Electronic Engineering
These courses are led jointly by experts in the School of Engineering and WMG (Warwick Manufacturing Group). Interdisciplinary projects enable you to tackle challenges that could range from engineering a robot to rescue people from a collapsed building, to designing and building a nano-satellite. You will develop sought-after skills including a multidisciplinary approach to problem solving, the ability to manage projects and communicate ideas, and the capacity to lead, research, design, innovate and develop products and systems.

Our accredited Engineering degrees help you to develop an in-depth understanding of the principles of engineering, with teaching from a wide range of automotive, civil, electronic and mechanical engineering experts, and options to specialise in areas that interest you.
Available MEng electives
(see page 16)
- Business Management
- Communications
- Fluid Dynamics
- Robotics
- Sustainability
- Systems Engineering
- Intercalated year
- Year in research

Course structure

Years one and two
All engineering students follow the same first two years of study, focusing on core areas of engineering, with opportunities to experience laboratory and design work in all disciplines. You can also choose options from within or outside Engineering, such as aesthetics of design, vehicle technology, biomedical engineering and foreign languages.

Year three
BEng students may choose from any available option offered by the department. MEng students follow a core syllabus containing a carefully balanced mixture of other disciplines which give an integrated (systems) perspective.

Core modules
- Individual Project
- Applied Control, Instruments, Measurement and Electrical Machines
- Automation and Robotics
- Dynamics of Vibrating Systems
- Quality Techniques
- Signal Processing
- Systems Modelling and Control

Year four (MEng only)
General Engineering students are free to choose any modules offered by the department as long as they have satisfied the module pre-requisites in year three.

Core modules
- Group Project

Optional modules
- Advanced Control
- Automobile Systems Dynamics and Control
- Biomedical Systems Modelling
- Design for Sustainability
- Dynamic Analysis of Mechanical Systems
- Healthcare Technology Engineering
- Mathematical and Computer Modelling
- Power Electronic Converters and Devices
- Quality Systems
- Renewable Energy
- Signal and Image Processing
- Simulation of Operations
- Supply Chain Management

Further information
www.warwick.ac.uk/H100
www.warwick.ac.uk/H102

We are constantly evolving our courses to keep up with developments in engineering and new requirements from industry, so the modules available, particularly in the later years of your course, are subject to change.
You will be taught by experts from WMG (Warwick Manufacturing Group), renowned worldwide for its innovative links between academia and industry, and will learn from cutting-edge research in areas including automation systems and digital lifecycle management. You can take part in industrial visits and receive input from firms such as Jaguar Land Rover, helping you to apply your knowledge to real world challenges and boosting your employability. Our multidisciplinary approach to solving engineering problems will equip you to work in a variety of industrial sectors. You will also develop research and design skills, along with the ability to innovate and develop products and processes.

Manufacturing and Mechanical Engineers find employment within advanced industries as diverse as aerospace, consumer goods, electronics and pharmaceuticals, as well as the more traditional light and heavy engineering sectors.

Accrediting institutions:

BEng Manufacturing and Mechanical Engineering
3 years | UCAS code: HH73

MEng Manufacturing and Mechanical Engineering
4 years | UCAS code: HH37

These accredited degrees provide a solid foundation in manufacturing engineering and mechanical design principles in the context of advanced 21st century technology.
We are constantly evolving our courses to keep up with developments in engineering and new requirements from industry, so the modules available, particularly in the later years of your course, are subject to change.

### Available MEng electives
(see page 16)
- Business Management
- Robotics
- Sustainability
- Intercalated year
- Year in research

### Course structure

#### Years one and two
All engineering students share the same first and second years, in which you will study core areas of engineering alongside optional modules such as biomedical engineering and aesthetics of design.  
*(see page 15)*

#### Year three
Core modules
- Individual Project
- Automation and Robotics
- CAD/CAM and Simulation
- Design and Management of Lean Operations
- Design for Manufacture
- Industrial Engineering
- Quality Techniques

#### Year four (MEng only)
Core modules
- Group Project
- Innovative Process Development

Optional modules
Five from the following:
- Automotive Materials and Processes
- Advanced Robotics
- Design for Sustainability
- Dynamic Analysis of Mechanical Systems
- Fuels and Combustion
- Life Cycle Engineering for Manufacturing Systems
- Quality Systems
- Renewable Energy Systems
- Simulation of Operations
- Supply Chain Management
- Vehicle Propulsion

“*The flexible course design is one of the main reasons why I chose Warwick. I’ve been able to design the course to do exactly what I wanted to do. I took modules in aesthetics, advanced computer engineering, robotics, advanced management techniques and advanced manufacturing – all bits and pieces to add to my own interest and broaden my spectrum of knowledge.*”

James Fairbain
Manufacturing and Mechanical Engineering

Further information
www.warwick.ac.uk/HH73
www.warwick.ac.uk/HH37
Our courses take a multidisciplinary approach to engineering challenges and are led by experts in the School of Engineering and WMG (Warwick Manufacturing Group). There will be opportunities to learn from leading research groups, in areas such as precision mechanics, fluid dynamics and sustainable thermal energy technology, and to access our excellent resources, including a digital workshop where you can 3D-print your designs. You will develop highly sought-after skills in project management and communication, and the ability to research, design and develop mechanical engineering products and systems.

Group projects simulate collaborative working in industry by tackling challenges such as using energy from the human body to power a heart pacemaker, creating a cost-effective refrigeration system to store vaccines, or improving power transmission systems. We routinely participate in the Formula Student competition.

Career destinations for Mechanical Engineers are varied, including automotive and aerospace industries, mechanical and solutions engineers for utilities companies and engineering consultancies, and as analysts in banking, finance and management consultancy.

Mechanical Engineering

BEng Mechanical Engineering
3 years | UCAS code: H300

MEng Mechanical Engineering
4 years | UCAS code: H302

These accredited courses enable you to develop a sound understanding of mechanical engineering principles and the expertise to design and create sustainable, cutting-edge technologies.
Course structure

Years one and two
All engineering students share their first and second years, which focus on core areas of engineering, with options to specialise in mechanical engineering via laboratory and design work. (see page 15)

Year three
Core modules
• Individual Project
• Dynamics of Vibrating Systems
• Applied Control
• Engines and Heat Pumps
• Fluid Mechanics
• Mechanical Design
• Planar Structures and Mechanisms

Year four (MEng only)
Core modules
• Group Project
Optional modules
Six modules in total – a minimum of two from:
• Advanced Fluid Dynamics
• Computational Fluid Dynamics
• Dynamic Analysis of Mechanical Systems
• Finite Element Methods
• Heat Transfer Theory and Design
• Mathematical and Computer Modelling
• Precision Engineering and Microsystems

Plus four from:
• Advanced Robotics
• African Field Course
• Biomedical Systems Modelling
• Design for Sustainability
• Fuel Cells and Energy Storage
• Fuels and Combustion, Innovative Process Development
• Internal Combustion Engines
• Optical Engineering
• Quality Systems
• Renewable Energy Systems
• Simulation of Operations
• Supply Chain Management

Available MEng electives (see page 16)
• Business Management
• Fluid Dynamics
• Sustainability
• Intercalated year
• Year in research

Further information
www.warwick.ac.uk/H300
www.warwick.ac.uk/H302

We are constantly evolving our courses to keep up with developments in engineering and new requirements from industry, so the modules available, particularly in the later years of your course, are subject to change.
Engineering Business Management

BEng Engineering Business Management
3 years | UCAS code: HN12

To be successful in the modern business environment, engineering companies need to provide not only superior products but also superior services.

A large proportion of companies worldwide are engineering-based. They create a substantial demand for graduates who can demonstrate an understanding of technical engineering subjects as well as the wider aspects of entrepreneurial expertise and strategic business management to provide an interface between such diverse roles as design, manufacturing, marketing, contract management and supply chain management.

This degree is led by WMG (Warwick Manufacturing Group) and is ideal for students who wish to pursue alternatives to becoming a chartered engineer. In common with our Engineering and Business Studies degree stream, students begin with two years studying more general engineering concepts, but in the third year they remain within the School of Engineering to take half their modules from Engineering and half from Warwick Business School. A BEng is awarded to reflect the greater emphasis on engineering.

warwick.ac.uk/HN12

“The course is really interesting, as studying in a multidisciplinary environment means I’ve gained experience of both the technical and business side of things. With engineering that is very important, because whatever project you work on in the future, you will need technical knowledge and financial acumen. I’ve enjoyed my time here and have decided to continue my studies at Warwick on a Master’s degree.”

James Mwangi
Engineering Business Management
You start your degree spending two years studying with our engineering students and then transfer to Warwick Business School for your third year to study with the business students. This provides you with a broad introduction to both disciplines and will help to equip you with the technical and business skills required for a career in management, business or commerce, rather than leading to a career as a chartered engineer.

While in the School of Engineering you can take business or engineering related optional modules - for example, our module on the rights and wrongs of the engineering profession or a biomedical engineering module.

In your third year you can choose from a range of different business modules including economics, marketing, finance and accounting, and entrepreneurship. This degree opens up a wide range of graduate job opportunities, for example in accounting, as well as postgraduate opportunities to further develop your business skills.

I’m passionate about Engineering and Business and this course gave me the opportunity to study in two prestigious departments at Warwick. Over the first two years I gained a great insight into different streams of engineering, which has been followed by a wide variety of modules in the third year. It has been particularly exciting to learn about diverse subjects such as European law and taxation alongside engineering. With an overview of both engineering and business, my degree has given me a wide variety of career opportunities in many different industries and the ability to succeed.”

Ghassan Awdi
Engineering and Business Studies
Computer Systems Engineering is a fully integrated degree in the Department of Computer Science that is taught jointly with the School of Engineering. It focuses on the design of computer systems and their real-time applications, with an emphasis on pervasive technologies, including wireless networks, mobile devices and sensors, robotics and wearable technology.

You will receive a firm grounding in the principles of Computer Science, which will be broadened and complemented by the experience of engineering electronic systems.

Do you want to understand the technologies that enable our connected world?

BEng Computer Systems Engineering
3 years | UCAS code: G406

MEng Computer Systems Engineering
4 years | UCAS code: G408

(This degree does not follow the same first two years as the other programmes listed in this booklet.)
Course structure

**First year**
In your first year you will study computer programming, data structures and algorithms as well as system modelling, and electronic devices and circuits.

**Core modules**
- Programming for Computer Scientists
- Design of Information Structures
- Computer Organisation and Architecture
- Professional Skills
- Engineering Mathematics and System Modelling
- Electrical and Electronic Circuits

**Optional modules**
Two of the following:
- Mathematics for Computer Scientists I
- Web Development Technologies
- Computer Security
- Biomedical Engineering
- Multimedia Technology
- A Foreign Language

**Second year**
The second year builds on both core disciplines through the study of modules in areas such as digital systems design, advanced computer architectures, software engineering, signal processing and computer networks.

**Core modules**
- Operating Systems and Computer Networks
- Advanced Computer Architecture
- Software Engineering
- Engineering Mathematics and Technical Computing
- Analogue Systems Design
- Digital Systems Design

**Optional modules**
Two of the following:
- Digital Communications and Signal Processing
- Artificial Intelligence
- Database Systems
- Starting a Business
- A Foreign Language

**Third year**
In your third year you will undertake an individual project, where you will apply your knowledge to an area of your choice under the supervision of world-leading academics from Computer Science and Engineering. You will also study embedded systems, sensor networks and mobile communications, robotics, and modern VLSI design.

**Core modules**
- Project
- Embedded Systems
- Project Management

**Optional modules**
Four modules from list of approved modules from both the School of Engineering and Department of Computer Science.

**Fourth year**
If you follow the MEng course you will stay on for a fourth year to study more advanced material. You will also participate in a multidisciplinary group project, which will integrate taught material as well as helping you to improve your research and development skills in a team environment.
Applying to us

All applications, whether from UK residents or from overseas, are made online through the Universities and Colleges Admissions Service (UCAS).

If you have any enquiries, you can call UCAS on 0871 468 0 468. Our institution code is W20.

ucas.com

Entry requirements (excluding Computer Systems Engineering)

Our 2017 offer levels are:

**BEng/BSc**
- A levels: AAB (including Mathematics and Physics)
- IB: 36 points (including grade 5 in Mathematics and Physics; at least one of these should be at higher level)

**MEng**
- A levels: AAA (including Mathematics and Physics)
- IB: 38 points (including grade 5 in Mathematics and Physics; at least one of these should be at higher level)

These are typical levels, given for guidance purposes only; all applicants are given individual consideration.

We will consider strong, motivated candidates for entry into year one who have either Mathematics or Physics at A level and who have demonstrated their aptitude for both these subjects at a lower level, such as GCSE or AS level.

A level General Studies and Critical Thinking are excluded from these offer requirements.

We will accept applications from those offering equivalent qualifications and are happy to give advice in advance of an application, to those who are uncertain as to whether they satisfy our entry criteria. Please refer to our website for offer levels on a range of qualifications.

Entry requirements (Computer Systems Engineering)

Offer levels for Computer Systems Engineering are:

**BEng/BSc**
- A level: AAA (including an A in Mathematics and Physics)
- IB: 38 points (including grade 6 in higher level Mathematics)

**MEng**
- A level: A*AA (including an A in Mathematics)
- IB: 39 points (including grade 6 in higher level Mathematics)

warwick.ac.uk/ug
International students

The International Office runs its own scholarship programme to assist students applying from overseas.

warwick.ac.uk/study/international

Language requirements

If your academic qualifications meet our admissions requirements, but your English language qualifications are not accepted as equivalent to GCSE or International Baccalaureate English, you may be offered a place on condition that you achieve an acceptable qualification before you join us.

If English is not your first language, you must achieve one of the following:

- IELTS 6.0, including minimum 5.5 in each component
- TOEFL 87 internet-based with a minimum of 21 in listening and writing, 22 in reading and 23 in speaking
- PTE Academic 60 with no less than 59 in any component

ielts.org
ets.org
pearsonpte.com
cambridgeesol.org

Visiting us

Applicants who live in the UK are strongly encouraged to visit us to meet students and staff and learn more about life at Warwick, our facilities and the course content.

Before you apply you can visit Warwick via our University-wide Open Days, held in June, September and October each year, which include engineering talks and an opportunity to see the engineering facilities.

warwick.ac.uk/opendays
warwick.ac.uk/engineering/ug/visit

After an application is made all Engineering offer holders resident in the UK will be invited to an admissions day. You will be given a tour of our facilities by a current engineering student and receive a presentation about the course, a campus tour, and a chance to experience life as an engineering student.

Further information

If you would like any further information, or have any questions, please contact our admissions secretary

+44 (0)24 7652 4129
engadmissions@warwick.ac.uk
warwick.ac.uk/engineering/ug
Find out more

This booklet gives you a flavour of what Warwick has to offer, but we know you probably have lots of questions. Why not get to know us a little better?

Connect with us
- studentblogs.warwick.ac.uk
- facebook.com/warwickengineering
- youtube.com/uniwarwick

Email us
For queries about admissions, you can email engadmissions@warwick.ac.uk
For general questions about the University, email student.recruitment@warwick.ac.uk

Talk to us
If you have any queries about applying for a full-time undergraduate degree course at Warwick and you can’t find the answers in our prospectus or online, or you just want to talk things through, you can give our Undergraduate Engineering Admissions Team a call on +44 (0)24 7652 4129.

Go online
Check out our website for full and up-to-date course details, advice on finance and funding, and more information on student life.
- www.warwick.ac.uk

Come to a University Open Day
Don’t just take it from us, come and see for yourself what Warwick’s all about. Our University Open Days give you the chance to meet staff and students, visit academic departments, tour the campus and get a real feel for life at Warwick.

If you can’t make an Open Day, why not attend a Warwick Visit? These last about two hours, include a campus tour and give you a quick snapshot of life as a Warwick undergraduate.

You’ll find full information on Open Days, Warwick Visits and other opportunities to visit us at:
- www.warwick.ac.uk/ug/visits

Meet us near to home
Can’t visit the UK? We attend exhibitions and make school visits in more than 40 countries.
- www.warwick.ac.uk/io
This information was correct at the time of printing. Our course and module content and schedule is continually reviewed and updated to reflect the latest research expertise at Warwick, so it is therefore very important that you check the website for the latest information before you apply and when you accept an offer. See our website for the latest information:

warwick.ac.uk/ug
Recognising commitment to advancing women’s careers in STEMM (Science, Technology, Engineering, Mathematics and Medicine) academia.

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