Electronic and Electrical Engineering
Undergraduate Degrees 2019
Electronics is so prevalent in today's world that opportunities for electronic engineering graduates exist across a vast range of industrial sectors. Medicine, aviation, communications, transport, space exploration, industrial automation, crime prevention, science, entertainment, music, gaming and environmental monitoring have all been revolutionised by electronics.

Electronics is also a vibrant, multidisciplinary academic field. This is particularly the case at Leeds, where our teaching and research draw on a range of other disciplines such as mechanical engineering, physics, business and computing. It is this broad experience that makes our graduates especially valuable in both industry and academia.

**OUR REPUTATION**
The School of Electronic and Electrical Engineering is globally renowned for teaching and research. We're ranked third in the UK for Electronic and Electrical Engineering in the Guardian university league tables 2018, and top 10 in The Times and The Sunday Times Good University Guide 2018. We achieved 93% overall student satisfaction in the National Student Survey (NSS) 2017.

We are ranked top five in the UK for our electronics research, with 100% of our research activity rated as either 'world-leading' or 'internationally excellent' (Research Excellence Framework, 2014).

In recognition of our strong and continued commitment to gender equality, we have received a prestigious Athena SWAN Silver Award.

This is awarded by the Equality Challenge Unit, the national body that promotes equality in the higher education sector.
Learning and teaching

Our groundbreaking research is an important feature of our courses and feeds directly into our teaching. You will be taught by academics who are leaders in their fields and engaged in the active research environment. Through our research and the funding it attracts, we are able to invest in world-class facilities and staff who will enthuse and inspire you.

INDUSTRY-RELEVANT COURSES
Our engagement with industry is one of the main reasons our graduates are so highly valued. The School has an active Industrial Advisory Committee, which helps ensure our courses are up to date with the modern practices and techniques that will enable you to succeed in industry upon graduation.

Our staff work with numerous companies on a variety of research and consultancy projects. We also organise industrial visits and offer additional seminars delivered by practising engineers and other professionals. This means that you will have direct contact with industry and potential employers from an early stage in your course.

FLEXIBLE DEGREES
Our core electronic and electrical engineering degrees share a common first two years. This means you have the freedom to switch courses up until the end of your second year.

All our courses have a modular structure where you will be required to study 120 credits per year.

You have the option of extending your studies by taking an industrial placement year or studying abroad for a year at one of our specially selected partner universities overseas. Visit the ‘Careers and employability’ section on page 8 to find out more about these options.

INTEGRATED MASTERS (MEng, BEng)
All our courses are Integrated Masters (MEng, BEng) degrees, providing you with great breadth and depth of study.

If you study for four years, you can graduate with an MEng – the preferred engineering qualification, which fulfils the academic requirements en route to Chartered Engineer status. This course offers you the opportunity to work on a wider range of projects with a high level of industrial involvement. Should you wish to graduate early, you may decide at any point until the beginning of the third year to graduate after three years with a BEng.

If you are sure from the start that you only want to study for three years, it is also possible to apply for the BEng version of our courses. The BEng is identical to the first three years of the MEng course and has the same entry requirements.

RANKED THIRD IN THE UK FOR ELECTRONIC AND ELECTRICAL ENGINEERING IN THE GUARDIAN UNIVERSITY LEAGUE TABLES 2018
FACILITIES
You will have access to our practical electronics teaching areas, including the Arm-sponsored embedded systems laboratory, the Keysight Technologies wireless communications laboratory, and the NXP electronics systems laboratory, all featuring professional equipment.

You will also have access to a range of research facilities for your final-year projects, such as the best terahertz electronics facility in Europe, a cleanroom for nanotechnology research, and state-of-the-art robotics and communications facilities.

STUDENT SUPPORT
When you start your course, you will receive a welcome pack to support your academic studies and project work. This includes tools, development kits, electronic components and a wide range of e-books.

Our personal tutorial system will provide you with academic and pastoral support. You will have a designated personal tutor and regular one-to-one meetings throughout your studies. You will also have weekly academic tutorials with your tutor in your tutor group (of typically six students) throughout your first year.

In addition, our excellent Student Support team is based close to where you’ll work and study to help with anything from academic advice to timetabling and coursework submission enquiries.

The web-based student portal will enable you to access the University’s student services and information, while our virtual learning environment (Minerva) will allow you access to your personal timetables, course materials, academic and social groups, and much more.
Hands-on learning

Laboratory classes and project work allow you to gain hands-on experience, investigating and applying material from your lectures and tutorials to real-life work situations.

They provide an excellent opportunity for you to develop essential skills such as problem-solving, communication and teamwork, all vital to success in your chosen career. All our courses include at least one significant project in every year of study.

**YEAR ONE**
You’ll work as part of a team to design, build and test an autonomous robot or a radio-controlled vehicle, to steer around a track. The project ends in a competition to see which team has the most innovative, longest-running and fun design.

**YEAR TWO**
You will carry out a challenging semester-long project that involves designing and building a microcontroller-based embedded system. This will test your creativity and ingenuity, as well as enhancing your electronics and programming skills.

**YEAR THREE**
A significant proportion of your third year is dedicated to project work. Depending on your programme of study, you’ll either complete a major individual project in your third year, or you’ll do a group design project in your third year and an individual project in your fourth year.

**YEAR FOUR (MEng)**
You’ll carry out a substantial research or development project. These are normally based in one of the School’s research groups. Applying the knowledge and skills obtained in previous years of study, you’ll gain experience of investigating a problem and using available resources to develop a solution. You’ll refer to technical literature, and acquire project management skills in time planning, managing risk and identifying realistic options.

Recent third- and fourth-year projects have included:
- Autonomous search-and-rescue robot
- 5G mobile system simulation
- Aviation flight-tracking receiver
- Gesture-controlled robotics
- Interactive dancefloor
- Quadrocopter surveillance drone.
My placement provider, Siemens Rail-IT, is a major provider of control and information systems for the UK rail industry. I joined the company as an undergraduate engineer responsible, as part of a team, for designing, testing, installing these systems. I was involved in the design stage for the £36 million Crossrail control and monitoring system for about three months assisting other engineers in producing the necessary system architecture drawings. The principal reason I have enjoyed my placement has been my involvement in a wide range of engineering activities from design to installation. This has really helped me identify where I would like to specialise in the future as an electronic engineer.

STEPHEN AGYEMAN-KUMA
Industrial placement year at Siemens Rail-IT
BEng Electronic and Electrical Engineering (Industrial)
A degree from the University of Leeds and the wider experience you’ll gain while you’re studying here will help you stand out from the crowd and secure that all-important graduate job.

REWARDING CAREERS
96% of our recent graduates have successfully secured a job or gone on to further study within six months of graduating (DLHE 2015/16).

Salaries vary from company to company, with some sectors attracting higher salaries owing to strong demand. Typical starting salaries for newly graduated electrical or electronic engineers are around £26,000, and salaries for specialist types of engineers or for those with Chartered Engineer status can be significantly more.

CAREERS SUPPORT
Throughout your time with us, our award-winning Faculty Employability team is here to support, guide and advise you. In addition to specialist face-to-face meetings, you’ll benefit from:

- timetabled employability sessions
- ongoing support to find internships and placements
- presentations and workshops delivered by employers.

Our Employability team also organises an annual Engineering, Technology and Science Careers Fair, which will give you the opportunity to meet over 140 graduate recruiters to gain an insight into graduate jobs and to explore placement, internship and graduate job opportunities.

INDUSTRIAL PLACEMENT YEAR
An industrial placement year is a great way to help you decide what kind of career you might like when you graduate. As well as giving you the opportunity to develop your own skills, you’ll gain a real insight into working life in a particular company or sector.

All our degrees allow you to undertake a placement year alongside your degree (either in the third year of the BEng or the third or fourth year of the MEng).

If you decide to undertake a placement year, this will extend your degree by 12 months. On successfully completing your placement year, you will be awarded the ‘Industrial’ variant in your degree title to demonstrate your unique expertise to future employers.

Our students can currently be found on placement at companies including:

- Arm
- Arup
- Intel
- Parker Hannafin
- Renishaw
- Siemens.

STRONG INDUSTRIAL LINKS
We have close links with some of the top graduate recruiters in the industry, including Keysight Technologies, Arm, BAE Systems, Boeing, BT, Ericsson, ESA, Filtronic, Fujitsu, GSK, IBM, Intel, Motorola, Nexia Solutions, O2, Pace Micro, NXP, QinetiQ, Siemens, and Sony.
I work for Jaguar Land Rover (JLR), the UK’s largest car manufacturer, with over 500,000 customers in 2016. JLR has two key sectors: Jaguar and Land Rover. Jaguar specialises in luxury saloon, sport and sports utility vehicles.

The knowledge and experience gained from an opportunity like this is invaluable, and it gives you great insight into how industries successfully function. It will also help you decide what industry fits your interests the most, so you could think of it as a tailoring service.”

MATHEW WASSELL
MEng, BEng Electronic and Electrical Engineering (Industrial) Product Development Engineer, Jaguar Land Rover

STUDY ABROAD
You have the option of taking an additional study abroad year, enabling you to experience another culture. This will involve you spending an extra year between the second and third year of your studies at one of our specially selected partner universities overseas.

Find out more about these and other opportunities at engineering.leeds.ac.uk/electronic/undergraduate
Our degrees

Our four core courses listed here offer a broad foundation in modern electronic engineering and a range of specialist options for those aiming for careers in the rapidly expanding areas of information technology, computer networks, communications systems, embedded systems and renewable energy.

During the first two years, you will gain a thorough understanding of the fundamental topics in the electronic engineering discipline and develop the key practical skills required. In the third and fourth years, you may specialise in the areas that interest you the most by choosing optional modules delivered by staff internationally recognised for research in their fields. It is this choice of options that determines your final degree title. You may change between these degrees until the end of the second year, giving you flexibility and the opportunity to sample different topics before you make your choice.

ELECTRONIC ENGINEERING (MEng, BEng)
This course allows you to study advanced electronic design, including system-on-chip design, embedded systems engineering and integrated circuit design and layout. Core modules will develop your knowledge and skills across a range of key topics in electronic engineering, as well as giving you a foundation in the key mathematical and physical principles that underpin the subject. You’ll also have the chance to choose optional modules in specialist topics, such as medical electronics, communications systems and physical micro- and nano-electronics, in line with your career plans and personal interests.

ELECTRONIC AND ELECTRICAL ENGINEERING (MEng, BEng)
Combining core topics across electronic engineering with a variety of specialist modules, this course will equip you with the knowledge and skills to work in a wide range of electronics careers. You’ll develop your knowledge of the mathematical and scientific principles that underpin electronic and electrical engineering, as well as key topics like circuit design and communications networks. Specialist modules will allow you to build on this foundation in areas like power electronics, energy conversion, control circuits and smart grids.

ELECTRONIC AND COMMUNICATIONS ENGINEERING (MEng, BEng)
If you’re looking for a career in the communications industries, this course is for you. You’ll gain a broad foundation in modern electronic engineering and the mathematical and scientific principles that underpin it. You’ll also choose from a range of specialist options, from digital signal processing to communications networks and internet architecture.

ELECTRONICS AND RENEWABLE ENERGY SYSTEMS (MEng, BEng)
This course allows you to study electronic engineering alongside specialist topics in the field of renewable energy systems to meet these challenges head-on. You’ll gain a foundation in the mathematical and scientific principles that underpin electronic engineering and core topics like circuit theory and communications systems. Then you’ll build your knowledge of areas such as power systems, smart grid systems, and power electronics for renewable systems control and energy conversion.

Our courses are accredited by IET (Institution of Engineering and Technology). The MEng version is accredited by IET on behalf of the Engineering Council for the purposes of fully meeting the academic requirement for registration as a chartered engineer (CEng). Graduates of the BEng schemes can achieve this with additional study.

REWARDING CAREERS
Graduates have gone on to work as instrument, electronics, electrical and project engineers, as well as software engineers and developers.

Recent graduates have secured positions including:
• Electronic Designer, Agility Global
• Graduate Engineer, Arm Holdings
• Electronic Engineer, Babcock International
• Graduate Hardware Engineer, BAE Systems
• Instrument Engineer, BP
• Software Engineer, BT
• Electronic Programmer, EnOcean
• Research Engineer, Georgia Tech
• Software Developer, Imagination Technologies
• RF Filter Specialist, Radio Design
• Graduate Engineer, Transport for London.

engineering.leeds.ac.uk/electronic
The first two years of these four degree courses share the same set of compulsory modules and in years three and four you will undertake specialist modules according to your chosen degree course. This list of modules will give you a flavour of what you will study but may change from time to time. For a complete list of our latest module information visit courses.leeds.ac.uk

### Year 1

<table>
<thead>
<tr>
<th>Compulsory modules:</th>
<th>Additional modules:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Circuit Analysis and Design</td>
<td>Engineering Mathematics*</td>
</tr>
<tr>
<td>Circuit Theory</td>
<td>Introduction to Engineering Mathematics*</td>
</tr>
<tr>
<td>Communications Systems</td>
<td>Algorithms and Numerical Mathematics*</td>
</tr>
<tr>
<td>Communications Networks and Signals</td>
<td></td>
</tr>
<tr>
<td>Digital Electronics and Microcontrollers</td>
<td></td>
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<tr>
<td>Further Engineering Mathematics</td>
<td></td>
</tr>
<tr>
<td>Physical Electronics 1</td>
<td></td>
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<tr>
<td>Physical Electronics 2</td>
<td></td>
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</tbody>
</table>

* Students entering with BTEC or Access to HE Diploma qualifications are required by the School to take the Introduction to Engineering Mathematics module. All other students are required to take the Engineering Mathematics and Algorithms and Numerical Mathematics modules.

### Year 2

<table>
<thead>
<tr>
<th>Compulsory modules:</th>
<th>Communications Theory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electronic Circuit Design</td>
<td>Transistors and Optoelectronic Devices</td>
</tr>
<tr>
<td>Power Electronics</td>
<td>Control Systems</td>
</tr>
<tr>
<td>High-frequency Electronics</td>
<td>Embedded Systems Project</td>
</tr>
<tr>
<td></td>
<td>Microprocessors and</td>
</tr>
<tr>
<td></td>
<td>Programmable Logic</td>
</tr>
</tbody>
</table>

These are typical modules/components studied and may change from time to time.

It was the practical elements of the course at the University of Leeds that enticed me to apply, and the hands on experience helped me to cement the knowledge I gained in lectures and gave me a better idea of different ways I could use my degree.

I am now undertaking a PhD and I am currently designing a microfluidic system to analyse immune interactions at the single cell level. This is an interdisciplinary endeavor which bridges engineering with cancer research. I was able to apply for my position thanks to my electronic and electrical engineering background and the ‘wet lab’ experience I gained during my MEng research project on molecular scaffolding.”

**FAITH BATEMAN**  
Summer placement at Ultra Electronics  
MEng Electronic and Electrical Engineering (Summer placement)
## Year 3

<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>Professional Studies</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>Integrated Circuit Design</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>RF and Microwave Engineering</td>
<td>C</td>
<td>O</td>
<td>C</td>
<td>-</td>
</tr>
<tr>
<td>Digital Communications</td>
<td>C</td>
<td>O</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>Embedded Systems</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>Group Design Project</td>
<td>C</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Electric Power Systems</td>
<td>O</td>
<td>C</td>
<td>-</td>
<td>C</td>
</tr>
<tr>
<td>Digital Media Engineering</td>
<td>O</td>
<td>-</td>
<td>C</td>
<td>-</td>
</tr>
<tr>
<td>Electric Machines</td>
<td>-</td>
<td>C</td>
<td>-</td>
<td>C</td>
</tr>
<tr>
<td>Group Design Project</td>
<td>-</td>
<td>C</td>
<td>C</td>
<td>C</td>
</tr>
</tbody>
</table>

*Choose one optional module

**c = compulsory, o = optional**
## Year 4

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</thead>
<tbody>
<tr>
<td>Industry Dissertation</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>MEng Individual Project</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>Wireless Communications Systems Design</td>
<td>O</td>
<td>O2</td>
<td>O</td>
<td>-</td>
</tr>
<tr>
<td>Digital Signal Processing for Communications</td>
<td>O</td>
<td>-</td>
<td>0</td>
<td>-</td>
</tr>
<tr>
<td>Digital Wireless Communications Principles</td>
<td>O</td>
<td>-</td>
<td>0</td>
<td>-</td>
</tr>
<tr>
<td>Data Communications and Network Security</td>
<td>O</td>
<td>O2</td>
<td>0</td>
<td>-</td>
</tr>
<tr>
<td>Micro- and Nano-electromechanical Systems</td>
<td>O</td>
<td>O2</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>FPGA Design for System-on-Chip</td>
<td>O</td>
<td>O2</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Control Systems Design</td>
<td>O</td>
<td>O1</td>
<td>-</td>
<td>O</td>
</tr>
<tr>
<td>Embedded Microprocessor System Design</td>
<td>O</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Medical Electronics and e-Health</td>
<td>O</td>
<td>O2</td>
<td>0</td>
<td>-</td>
</tr>
<tr>
<td>Power Electronics and Drives</td>
<td>-</td>
<td>O1</td>
<td>-</td>
<td>O</td>
</tr>
<tr>
<td>Electric Power Generation by Renewable Sources</td>
<td>-</td>
<td>O1</td>
<td>-</td>
<td>C</td>
</tr>
<tr>
<td>Communication Network Design</td>
<td>-</td>
<td>-</td>
<td>0</td>
<td>-</td>
</tr>
<tr>
<td>Optical Communications Networks</td>
<td>-</td>
<td>-</td>
<td>0</td>
<td>-</td>
</tr>
<tr>
<td>High-speed Internet Architecture</td>
<td>-</td>
<td>-</td>
<td>0</td>
<td>-</td>
</tr>
<tr>
<td>Smart Grid Analysis</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>O</td>
</tr>
<tr>
<td>Electric Power Generation and Distribution</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>O</td>
</tr>
</tbody>
</table>

Choose four optional modules

Choose two from O1 optional modules and three from O2 optional modules

Choose four optional modules

Choose three optional modules

_c = compulsory, o = optional_

This list modules will give you a flavour of what you will study but may change from time to time. For a complete list of our latest module information visit [courses.leeds.ac.uk](http://courses.leeds.ac.uk)
Communications, information, visualisation and sensing technologies are becoming increasingly integrated into smartphones, smart homes, electronic healthcare and other areas. As a result, the interface between electronics and computing is a key growth area for the technology industry.

Taught by the School of Electronic and Electrical Engineering alongside the School of Computing, this course has been designed to meet this need. You'll study the foundations of electronics and computing, from programming languages to electronic circuit design, and learn how the whole hierarchy of electronic hardware and software fits together.

During the first two years, you'll study the foundations of electronics and computing, covering topics such as electronic circuit design, digital electronics, computing systems, software design and programming. You'll learn how we go from individual transistors to microprocessors, and on to full computer systems, communication networks, data routing and software applications.

This learning will provide the basis for your studies in year three, when you'll take more specialised modules in fields like digital communications and embedded systems. You'll also have the chance to select optional modules that suit your interests and career ambitions on topics such as secure computing, mobile application development and computer graphics.

For MEng students, the fourth year provides a wide range of choice in advanced areas such as FPGAs, embedded microprocessors and cloud computing. You'll also complete a dissertation on a particular aspect of the industry to help you prepare for professional life.

HANDS-ON LEARNING
Potential student projects cover a broad range of topics owing to the close relationship between electronics and computer engineering. The integration of powerful computing systems with smart electronic hardware means students can develop high-functionality projects.

Project examples include:
- Autonomous mobile robot tour guide
- Augmented reality modelling with a haptic-feedback glove
- Internet-of-Things smart home monitoring system
- Handheld gaming platform.

This is a great course which combines both electronics and computer science, which are the two fields which I am interested in the most. Moreover, the university is very highly ranked for Electrical and Electronic Engineering and has a very good reputation.

I highly enjoy studying both my electronics modules and computing modules. The best aspect of my course is that it combines the knowledge in the two subjects and allows me to have a further understanding and ability in both fields.”

ALEKSANDAR KORNOV
MEng, BEng Electronics and Computer Engineering
### Year 1

**Compulsory modules:**
- Computer Architecture
- Introduction to Discrete Mathematics
- Procedural Programming
- Object Oriented Programming
- Programming Project
- Circuit Analysis and Design
- Communications Networks and Signals
- Communications Systems
- Digital Electronics and Microcontrollers
- Engineering Mathematics

### Year 2

**Compulsory modules:**
- Formal Languages and Finite Automata
- Algorithms and Data Structures I
- User Interfaces
- Compiler Design and Construction
- Networks
- Electronic Circuit Design
- Communications Theory
- Embedded Systems Project
- Microprocessors and Programmable Logic

### Year 3

**Compulsory modules:**
- Professional Studies
- Digital Communications
- Embedded Systems
- Group Design Project

**Optional modules:**
- Distributed Systems
- Parallel Computation
- Mobile Application Development
- Computer Graphics
- Secure Computing
- Digital Media Engineering

### Year 4 (MEng)

**Compulsory modules:**
- Industry Dissertation
- MEng Individual Project

**Optional modules:**
- Parallel and Concurrent Programming
- Foundations of Modelling and Rendering
- High-Performance Graphics
- Cloud Computing
- High-speed Internet Architecture
- FPGA Design for System-on-Chip
- Embedded Microprocessor System Design
- Medical Electronics and e-Health

This list of modules will give you a flavour of what you will study but may change from time to time. For a complete list of our latest module information visit courses.leeds.ac.uk
Mechatronics integrates electronics with mechanical design and robotics to create intelligent systems. Advances in mechatronics and robotics are having a profound impact in every industry sector, including manufacturing, transport, energy, health and entertainment.

This unique multidisciplinary course offers you the opportunity to study the most exciting aspects of electronics, mechanical design, artificial intelligence and computer engineering, and apply these to the design and manufacture of sophisticated intelligent systems.

The course is delivered jointly by the schools of Electronic and Electrical Engineering, Mechanical Engineering, and Computing, building on the cutting-edge research being carried out in the £5.5m EPSRC National Facility for Innovative Robotic Systems, which we host on campus. You’ll use a range of industry-standard software in the CAD suite and state-of-the-art lab facilities such as ABB industrial robot arms.

You’ll undertake extensive project work in every year, equipping you with the knowledge and skills for a professional career in this exciting, emerging sector.

You’ll study a wide variety of core modules in your first two years, giving you a solid foundation across several disciplines: from programming for robotics, artificial intelligence and machine learning to power electronics, real-time system design and engineering mathematics. You’ll learn how mechanics, electronics, computer engineering and intelligent control can come together in the development of mechatronics and robotic systems.

In year three you’ll develop this knowledge in a specialised direction. You’ll study mechatronics design integration and key issues in robotics and machine intelligence, as well as choosing from optional modules that apply your knowledge to areas such as computer vision or biomedical engineering design. An individual project will allow you to focus on an engineering problem in depth.

MEng students will be introduced to different applications of robotics and mechatronics and benefit from an even broader choice of optional modules. You could focus on surgical and rehabilitation robotics, control systems design, industrial robotics or image analysis, among other areas. You’ll also develop your understanding of the industry through a dissertation and complete a substantial team project.

HANSON LEARNING
Project work is an important part of the course and you will undertake a project in every year of study; recent examples of final-year projects include:
- Robotics for volcanic exploration
- Development of visual systems for a self-driving car
- Design of a wall-climbing robot
- Design of underwater propulsion systems
- Mechatronic modelling of the spinal column
- Robotic system design to control an electronically integrated custom violin
- Simulation and design of VTOL aircraft simulator
- Robotic arthrosis for assisting walking for disabled people
- Artificial upper and lower limbs
- Swarm robotics
- Kinect-controlled industrial robot arms
- Pipe inspection robots.

REWARDING CAREERS
A Professional Studies module in your final year will allow you to focus on and define your career ambitions. You’ll receive unrivalled support from our dedicated Employability team throughout the duration of your degree. Our graduates are in high demand, with career opportunities in an exceptionally wide range of industry sectors: manufacturing, energy, transport, healthcare, security and defence, aerospace, emergency services, agriculture, even the entertainment and creative industries.

Recent graduates have secured positions including:
- Electronic Engineer, Airbus UK
- Mechatronics Engineer, ALTINAY Robot Technologies Inc
- Graduate Engineer, Forum Energy Technologies
- Instrumentation Engineer, MicroLab Devices Ltd
- R&D Engineer, Q Electronics
- Amplification Engineer, Solid Solutions
- Business Development Manager, SK Robotics
- Scientific Lead, Swedish Biomimetics 3000
- Quality Assurance Engineer, Toshiba.

This course is accredited by the Institution of Mechanical Engineering (IMechE). It is also accredited by the Institution of Engineering and Technology (IET) on behalf of the Engineering Council for the purposes of fully meeting the academic requirement for registration as a chartered engineer.

Taught jointly by Electronic and Electrical Engineering, Mechanical Engineering, and Computing.
### Year 1

**Compulsory modules:**

- Introduction to Mechatronics and Robotics
- Circuit Analysis and Design
- Digital Electronics and Microcontrollers
- Communications for Robotics
- Programming for Robotics
- Mechanics for Mechatronics and Robotics
- Engineering Mathematics
- Further Engineering Mathematics

### Year 2

**Compulsory modules:**

- Real Time System Design
- Programmable Hardware
- Sensors, Actuators and Mechanisms
- Electronic Circuit Design
- Power Electronics
- Control Systems
- Design and Manufacture for Mechatronics and Robotics
- Artificial Intelligence

### Year 3

**Compulsory modules:**

- Professional Studies
- Individual Mechatronics and Robotics Project
- Mechatronics Design Integration
- Intelligent Systems and Robotics
- Machine Learning
- Electric Machines
- Additive Manufacturing

### Year 4 (MEng)

**Compulsory modules:**

- Industry Dissertation
- Team Mechatronics and Robotics Project

**Optional modules (choose three):**

- Control Systems Design
- Surgical and Rehabilitation Robotics
- Industrial Robotics
- FPGA Design for System on Chip
- Image Analysis
- Bio-inspired Computing
- Biomechatronics & Medical Robotics
- Aerial Robotics

*This list of modules will give you a flavour of what you will study but may change from time to time. For a complete list of our latest module information visit courses.leeds.ac.uk*
### Entry requirements and how to apply

<table>
<thead>
<tr>
<th>Degree title</th>
<th>UCAS code</th>
<th>Duration (years)</th>
<th>A-level</th>
<th>BTEC</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEng, BEng Electronic Engineering</td>
<td>H610</td>
<td>3/4</td>
<td>AAA including Mathematics, excluding General Studies and Critical Thinking.</td>
<td>D*DD with distinctions in all mathematics units plus a diagnostic maths test. Mathematics units must usually include Further Maths and/or other appropriate maths units. Some may be optional on your BTEC but are required by the Faculty. Please contact us for further information.</td>
</tr>
<tr>
<td>BEng Electronic Engineering</td>
<td>H615</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MEng, BEng Electronic and Electrical Engineering</td>
<td>H600</td>
<td>3/4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BEng Electronic and Electrical Engineering</td>
<td>H605</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MEng, BEng Electronic Communications Engineering</td>
<td>H640</td>
<td>3/4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BEng Electronic Communications Engineering</td>
<td>H645</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MEng, BEng Electronics and Renewable Energy Systems</td>
<td>H631</td>
<td>3/4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BEng Electronics and Renewable Energy Systems</td>
<td>H636</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MEng, BEng Electronics and Computer Engineering</td>
<td>H6B8</td>
<td>3/4</td>
<td></td>
<td></td>
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<tr>
<td>BEng Electronics and Computer Engineering</td>
<td>H6B7</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MEng, BEng Mechatronics and Robotics</td>
<td>HH36</td>
<td>3/4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BEng Mechatronics and Robotics</td>
<td>HH41</td>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Where an A-level science subject is taken, we require a pass in the practical science element alongside the achievement of the A-level at the stated grade.*

### EQUIVALENT QUALIFICATIONS
We welcome students with a range of qualifications and these are listed on our website. Applicants without A-level Mathematics may be required to undertake a diagnostic maths test to enable us to ensure an appropriate amount of mathematical literacy on our courses.

[engineering.leeds.ac.uk/electronic/ug-equivalents](http://engineering.leeds.ac.uk/electronic/ug-equivalents)

### ENGLISH LANGUAGE REQUIREMENTS
English Language at grade C (4) or above, or an appropriate English language qualification, eg IELTS 6.0 with no less than 5.5 in each component.

### FOUNDATION COURSES
If you do not have the formal qualifications for immediate entry to one of our degrees, you may be able to progress through a foundation year.

The University offers a one-year BSc Studies in Science designed to prepare students without a science background at A-level for study on one of our degrees in engineering.

We also offer an interdisciplinary Science Foundation Year for applicants who meet specific widening participation criteria.

[ilc.leeds.ac.uk](http://ilc.leeds.ac.uk)
INTERNATIONAL FOUNDATION YEAR IN ENGINEERING
Our International Foundation Year (IFY) is intended for international students who do not yet have the formal qualifications required for entry to year one of our degree courses.
internationalfoundationyear.leeds.ac.uk

LANGUAGE CENTRE
Our Language Centre provides the Academic English for Undergraduate Studies pre-sessional course, which is designed to help international students develop the necessary language and academic study skills for undergraduate study.
www.leeds.ac.uk/languages