Department of Electronic & Electrical Engineering

MEng & BEng Programmes

Electrical & Electronic Engineering
Computer Systems Engineering
Electrical Power Engineering
Electronic Engineering with Space Science & Technology
Electronic & Communication Engineering
Integrated Mechanical & Electrical Engineering
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Why Electronic & Electrical Engineering?

Electronic and electrical engineering is the modern technology that underpins many aspects of communication, transport and energy supply. Engineering is a creative discipline that also requires advanced technical skills. These skills are generously rewarded; graduate electronic and electrical engineers are highly sought after, typically command high salaries, and are often involved in cutting-edge projects.

Electronic and electrical engineers combine creativity in design with scientific analysis to develop products for new or existing applications. Having a solid grounding in mathematics, science and analysis, combined with a creative approach to real problems, makes the graduate engineer employable in a wide range of industries and businesses. They find jobs in a host of high-technology industries including electronics, power, aerospace, communication, automotive, robotics and manufacturing. They also find employment in IT, financial services, accountancy, the armed forces and management.

Why Electronic & Electrical Engineering at the University of Bath?

- 100% student satisfaction for Electronic & Electrical Engineering programmes in the National Student Survey 2014.
- 94% teaching satisfaction in the National Student Survey 2014.
- The University of Bath is one of only eight UK universities that are members of the prestigious IET Power Academy.
- All degree programmes are accredited by the Institute of Engineering & Technology (IET) and can be combined with a one-year paid professional placement.
- The Department is committed to supporting real-world group design and individual research project work.
- All students are able to enrol onto free classes run by the Foreign Languages Centre.

“We have found placements students from the University of Bath have good technical knowledge and a can-do attitude, responding well to the challenges of working in a product design consultancy.”

Aiden O’Hare, Electronics Skill Leader at DCA Design International
The Department of Electronic & Electrical Engineering

The Department is regarded as one of the best in the UK and its research was rated in the UK top 10 in the most recent national Research Assessment Exercise. The Department’s degree programmes are professionally accredited by the Institution of Engineering & Technology and so offer a secure route to Chartered Engineer status.

Our programmes provide graduates with the detailed technical knowledge and skills needed for the wide variety of careers in electronic and electrical engineering. The Department is one of only eight UK Universities that are members of the prestigious IET Power Academy. This membership assures students of the programme’s high industrial relevance and gives access to attractive scholarships. The popular Industrial Placements programmes provide opportunities for students across the very broad range of activities in the electronic and electrical engineering area.

Projects & laboratory work
A key characteristic of all the Department’s programmes is the laboratory and project work. Project work starts in years 1 and 2, and in years 3 and 4 the second semester of each year is devoted entirely to group and/or individual project work, uninterrupted by taught units and supported by dedicated electronics, robotics, computing, power-systems and project laboratories. Our students often win national prizes for their projects.

Industrial placements
Students can spend a year working on an optional industrial placement. Placements offer many advantages; in particular, they provide students with the opportunity to work in high-profile companies, to develop their skills in a commercial environment and to use sophisticated equipment. Recent placement students have had access to helicopters, particle accelerators, nuclear submarines, industrial robots and supercomputers. Placements can contribute to gaining professional status and allow students to make valuable contacts in industry, all of which can significantly improve their job prospects. Finally, the companies pay students on a placement, with recent salaries ranging from £14,000 to £23,000. We have a dedicated placements team who support students in finding and undertaking placements.

Research & teaching
The Department has an international reputation for its research work. This research is particularly strong in advanced sensor electronics, next generation LEDs and semiconductors, electrical power systems, satellite communication and navigation systems, space weather and imaging. This research feeds into teaching through group and individual projects in which students can join a research group, and in specialist units that introduce students to leading-edge engineering.

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BEng (Hons) and MEng (Hons) programmes in Electronic & Electrical Engineering

Bath offers the three-year BEng or four-year MEng programme in five disciplines. These provide you with the necessary accreditation towards securing Chartered Engineer status. There is also a combined MEng in Integrated Mechanical & Electrical Engineering (IMEE), jointly run by the Departments of Mechanical Engineering and Electronic & Electrical Engineering. Our Electronic & Electrical degrees are designed to allow you to specialise in one area without giving up the breadth of knowledge needed by a practicing engineer. Our Industrial Advisory Board, with members from a broad range of industries, reviews our programmes on a regular basis to keep them up to date with modern industrial practice.

All programmes offer an optional placement year after the second year of study, which is increasingly considered a recruitment tool by prestigious employers. Our graduates are sought after by industry, with the vast majority progressing directly into graduate level jobs within six months of completing their degree.

Programme structure

Four of our programmes are based on a common programme structure in the first two years. This allows you to make a decision on your choice of final degree at the end of year 2 after you have been exposed to all of the options available. These first two years give you a strong foundation in all areas of electronic and electrical engineering so that your specialist knowledge is not at the expense of flexibility.

Programmes based on a common programme structure are:

- Electrical & Electronic Engineering
- Electronic Engineering with Technology & Space Science
- Electrical Power Engineering
- Electronic & Communication Engineering

Two of our programmes have a different programme structure:

- Computer Systems Engineering (page 10-11)
- Integrated Mechanical & Electrical Engineering (page 12-13)

Common programme structure diagram

*Computer Systems Engineering students take Systems requirements & design units instead (see page 11)
Industrial Placements

The Department of Electronic & Electrical Engineering offers optional, year-long paid placements with some of the world’s most successful companies. Placements allow you to experience life in the workplace and are designed to make you more employable. Our strong links with industry mean we can offer opportunities to be employed by major companies, smaller businesses and government research organisations.

During a placement, you will develop your skills in a commercial environment and learn about sophisticated engineering systems. Students decide whether to take a placement during the second year of their degree. If you take part, you will spend your third year as a paid employee of a company or research centre. Placements last for 12 months, although they can be extended. Most employers are based in the UK.

Support and guidance

Our dedicated placements team will help you look for a position and advise you about CVs and interviews; they will also stay in regular contact with you throughout the year. The placement itself is structured and monitored so that it can form part of your record of professional development towards your Chartered Engineer status.

Recent placement students have worked at

- Hawk Eye
- Surrey Satellite Technology
- Visteon
- Sierra C-P
- Renishaw
- Ultra Electronics
- Boeing
- Rolls-Royce
- Siemens
- Sagentia
- Intel
- OC Robotics
- DCA Design
- Bentley
- Jaguar Land Rover
- National Grid
- CERN

“My placement at Renishaw has made use of both my analogue and digital design skills. It has also been an opportunity to gain some valuable training such as surface mount soldering techniques. I believe that having done a placement this year I will be more motivated on my return to university to do well in my degree. There are also many skills I have learnt in the last year, which I think will improve the engineer I can be. I see my options post graduation as fairly open; in broad terms, I could see myself either straight back into industry or I could start a postgraduate degree such as a PhD. If there is one thing my placement has shown me, it is that whichever option I take, I intend to be an engineer.”

Jasmine Dunn, MEng (Hons) Electrical and Electronic Engineering with placement

Key benefits

A placement gives you the opportunity to:

- improve your employment prospects
- earn between £14,000 and £23,000, whilst keeping your student status
- decide what strand of engineering to go into after year 2
- develop your skills alongside professional engineers
- use advanced equipment typical to current industry
- make industry contacts, which may lead to further work or a graduate job offer
- take a further step towards earning professional status.

“The consistent quality of the Industrial Placement students from Bath motivates Surrey Satellite Technology to return to the University each year looking for the best students, who could become permanent members of the SSTL team once they have graduated.”

Peter Garner, RF Team Leader at Surrey Satellite Technology
"The benefits became quickly apparent to me shortly after I arrived; Bath has world-leading facilities, rigorous training programmes, a diverse research portfolio, good funding opportunities and undergraduate courses accredited by the Institution of Engineering and Technology.

"Together with knowledgeable and encouraging staff, my experiences at Bath have been crucial to my academic development, for which I’m grateful.

"The city itself is clean and safe and, being compact and beautiful, is a major tourist destination. Aside from being historically significant, its location in the UK is also ideal for exploring the rest of the country.

"I’m now a final year PhD student in the Department of Electronic and Electrical Engineering, feeling privileged to stay on and make the most of my time here."

Lu Ma, BEng (Hons) Electrical Power Engineering graduate

"The University of Bath is extremely valued by engineering companies. The IMEE programme is the best of its kind currently offered in the UK. It helps prepare engineers for modern world technologies where the mix between mechanical and electrical elements is more and more common.

"The program has recently been acknowledged by big engineering institutions like the IET and the IMechE, and engineers belonging to this programme are being sought by a large number of companies nowadays.

"At my placement at National Oilwell Varco, I am currently working on designing drill bits. I am given the responsibility of managing the project through all the design process until manufacturing. This involves using different software like CFD, CAD or in house programs and applications. It has helped me see what companies look for when hiring a person and a year of experience is great to have on my CV."

Vicente Laiseca, MEng (Hons) Integrated Mechanical and Electrical Engineering with placement
MEng/BEng (Hons)  
Electrical & Electronic Engineering  

UCAS Codes:  
MEng  H600 (H601 with placement)  
BEng  H603 (H604 with placement)

Programme overview
Electrical and electronic devices and systems are vital to modern society. They are central to almost all the new and fast-moving technological changes of the 21st century. Rewarding careers in industry are available in important areas such as the automotive and aerospace industries, medical engineering, computers, communications, security, robotics, defence and entertainment amongst others. All of these industries rely on advanced electrical and electronic engineering to secure their competitive edge.

This degree programme equips students with the up-to-date theoretical, hardware and software skills and knowledge needed to work as an engineer in this exciting field. A significant strength of this programme is that it combines fundamental electrical and electronic engineering with a very large number of options, ranging from advanced medical sensors, to advanced microelectronics, to renewable energy engineering. This allows students to tailor their degree to match their interests and future plans.

Practical work & projects
Project work is a strong feature in all years of study. Semester-long, industry-focused group and individual projects develop essential technical, teamwork, business and management skills. Recent projects have included robotics, virtual-reality tracking systems, medical sensors, electric motors and drives, security radars, railway network monitoring systems, control systems for unmanned aerial vehicles, next generation LEDs, advanced laser diodes and Very Large Scale Integration (VLSI) of semiconductors. All projects can involve working in one of the Department’s internationally-recognised research groups.

Programme structure
For year 1 and 2 units please see common programme structure diagram on page three.

Key features
• The widest and most flexible range of options in terms of subject choice and future career paths.
• Research input drawn from across the entire Department.
• Projects frequently involve working with industry.

Career opportunities
Career prospects are excellent. Recent graduates have gone on to begin careers as Systems Engineers, Project Engineers and Project Managers with prestigious companies including:
• Airbus
• Atmel UK Ltd
• Intel
• Jaguar Land Rover
• Siemens.
MEng/BEng (Hons)  
Electronic Engineering with Space Science & Technology

UCAS Codes:  
MEng  H6HK (H6H5 with placement)  
BEng  H6H4 (H6H7 with placement)

Programme overview

The UK space industry is a rapidly-growing sector employing more than 18,000 people and has an annual turnover of more than £7.5 billion. The industry ranges from companies that develop and operate space hardware to others that exploit it for applications including Earth observation, space exploration, broadcasting and navigation. The space industry has a shortage of skilled electronic engineers and career opportunities are excellent for capable graduates.

This programme equips graduates with the skills and knowledge necessary to begin an exciting and rewarding career in the space industry, with space agencies or in space research institutes. The programme combines a core of fundamental electronic and electrical engineering with specialist material in space technology and space science. Students study spacecraft engineering, including mission analysis, propulsion systems, launch vehicles, attitude control, thermal control, telemetry, power systems, satellite navigation systems (including GPS), space electronics, Earth observation, the space environment and space weather.

Practical work & projects

Engineering laboratory classes are a feature in all years of the programme. In years 3 and 4, semester-long, industry focused group and individual projects develop essential technical, teamwork, business and management skills. Group project work can include systems-level design studies of spacecraft, including communications and Earth observation satellites, planetary landers and nanosatellites. Individual projects can involve working in one of the Department’s space research groups.

Programme structure

For year 1 and 2 units please see common programme structure diagram on page three.

Career opportunities

Graduates have a wide range of engineering skills making them well-suited to careers in the space industry, or anywhere advanced electronics is used. Recent graduates have commenced engineering careers in the space industry with companies including:

- Astrium
- Surrey Satellite Technology Limited
- Systems Engineering & Assessment (SEA) Ltd
- Thales.

Key features

- The combination of core electronic and electrical engineering with specialist units in space science and technology ensures maximum career flexibility after graduation.
- Internationally leading research in the Department feeds into units including satellite navigation systems, Earth observation, telecommunications and remote sensing amongst others.
- Projects can include strong input from the space industry.

Year 3 units

Semester 1
- Spacecraft systems engineering
- Digital networks & protocols
- Radio and optical waves for Communications
- Plus two options from
  - Digital communications
  - Control engineering
  - Power electronics & drives 1
  - RF & microwave circuits
  - Digital audio & signal processing

Year 4 units (MEng only)

Semester 1
- Satellite, terrestrial & mobile communications systems
- Terrestrial/space remote sensing & navigation systems
- Plus three options from
  - Fundamentals of electromagnetic compatibility
  - Digital image processing
  - Computational intelligence
  - Optical devices & communications systems
  - Power electronics & drives 2
MEng/BEng (Hons) Electrical Power Engineering

UCAS Codes:  MEng  H632 (H633 with placement)
             BEng  H630 (H631 with placement)

Programme overview
The UK energy industry adds a net value to the economy of more than £17 billion per year. Electricity alone has sales of around £100 million per day. Key players in this industry range from large national grid operators to regional distribution and power generation companies. Meeting the challenges of using renewable energy to reduce the problems of climate change means that there has never been a more exciting time to be involved in the power industry. These challenges will require engineers to create innovative engineering solutions to difficult problems. Career prospects for the coming decades are thus excellent in this growing sector.

This programme provides graduates with the detailed technical knowledge and skills required by the electrical energy industry. Bath is one of only eight UK universities that are members of the prestigious IET Power Academy. This membership assures students of the programme’s high industrial relevance and gives access to attractive scholarships. The programme combines a core of electrical and electronic engineering units with a range of specialist units, supporting careers in every branch of the power industry including power-system control, protection, economics, planning and operation.

Practical work & projects
Practical and project work is vital in the training of an engineer and is used from year 1 to develop essential technical, teamwork, business and management skills. In years 3 and 4, semester-long, industry-focused group and individual projects can include design studies for new power networks, smart-metering and solar, wind, wave and tidal energy. Individual projects can involve working in the Department’s Centre for Sustainable Power Distribution.

Programme structure
For year 1 and 2 units please see common programme structure diagram on page three.

Year 3 units
Semester 1
Control engineering
Electrical energy systems and analysis
Power electronics & drives I
Power system plant

Plus one option from
Digital communications
Spacecraft systems engineering
Digital audio & signal processing
Power markets & economics

Year 4 units (MEng only)
Semester 1
Energy management systems
Control of power systems
Power electronics & drives II
Power systems protection

Plus one option from
Fundamentals of electromagnetic compatibility
Computational intelligence

Career opportunities
Graduates from this programme have a wide range of power-engineering skills making them ideal for careers throughout the power industry. Recent graduates have commenced careers in the power industry with companies including:

- ABB
- Alstom
- Central Networks
- EDF Energy
- E.ON
- Garrad & Hassan Econnect
- Mott MacDonald
- National Grid
- RWE npower
- Scottish Power and Western Power Distribution.

Key features
- The combination of core electrical and electronic engineering with electrical power systems units ensures a wide choice of careers.
- Students can apply for IET Power Academy scholarships and placements with leading power companies.
- Leading-edge research at the University of Bath in power systems feeds into teaching, including the integration of renewable energy, smart-grids and micro-generation.
Career opportunities

Graduates of this programme have a very wide range of engineering skills making them ideally suited for careers in the communications industry, or anywhere advanced electronics are used. Recent graduates have commenced engineering careers with companies including:

- Cambridge Wireless
- GCHQ
- Hawk-Eye
- Motorola
- Orange
- Thales
- Vodafone.

Programme overview

Electronics and communications are important fields in modern engineering. They include microelectronic systems, microcontrollers, mobile communications, wireless networks, satellite systems and the internet. In the UK alone this industry generates annual revenues of more than £35 billion. The industry ranges from companies that conduct fundamental research and development into future technologies, through to others that design and deploy state of the art technologies. The electronics and communications industry has a shortage of skilled electronic and electrical engineers, meaning that career opportunities are excellent for capable graduates.

This programme gives graduates the specialist skills and knowledge necessary to begin an exciting and rewarding career in the electronics and communications industry. The programme delivers core electronic and communications engineering topics along with more specialist subjects such as microelectronics, power electronics, optical and radio-frequency circuits and systems, signal processing and networking technologies. Students study a very wide range of applications such as electronic system implementation including: hardware description languages (eg Verilog), fibre-optic communications, remote sensing systems (eg radar), cellular mobile systems such as UMTS (3G) and LTE (4G), digital terrestrial and satellite broadcast systems (eg DAB, Freeview and Sky) and a range of wired and wireless internet technologies such as WiFi, Ethernet, ADSL and WiMAX.

Practical work & projects

Semester-long, industry focused group and individual projects develop essential technical, teamwork, business and management skills. Group project work can include the design and prototyping of communications system architectures and sub-systems. Individual projects can involve working in one of the Department’s communications research groups.

Programme structure

For year 1 and 2 units please see common programme structure diagram on page three.

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<tr>
<td>Semester 1</td>
<td>Semester 1</td>
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<tr>
<td>Digital networks &amp; protocols</td>
<td>Satellite terrestrial &amp; mobile communication systems</td>
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<tr>
<td>Radio &amp; optical waves for communications</td>
<td>Optical devices &amp; communications systems</td>
</tr>
<tr>
<td><strong>Plus three options from</strong></td>
<td>Terrestrial/space remote sensing &amp; sat-nav systems</td>
</tr>
<tr>
<td>Digital communications</td>
<td><strong>Plus two options from</strong></td>
</tr>
<tr>
<td>Microelectronic systems</td>
<td>Fundamentals of electromagnetic compatibility</td>
</tr>
<tr>
<td>Power electronics &amp; drives 1</td>
<td>Digital image processing</td>
</tr>
<tr>
<td>RF &amp; microwave circuits</td>
<td>Computational intelligence</td>
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<tr>
<td>Spacecraft systems engineering</td>
<td>Biosensors &amp; bioelectronics</td>
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<tr>
<td>Digital audio &amp; signal processing</td>
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</table>

Key features

- The combination of core electronic engineering with specialist subjects in communications ensures maximum flexibility in careers after graduation.
- Internationally leading research in the Department feeds into taught units, including telecommunications, networks and radio-frequency engineering.
- Projects can include strong input from the communications industry.

MEng/BEng (Hons) Electronic and Communication Engineering

UCAS Codes:  
MEng  H622 (H623 with placement)  
BEng  H640 (H641 with placement)
Career opportunities

Career prospects are excellent. Recent graduates are highly sought after and have found employment in a wide range of industry sectors including information technology, telecommunications, broadcasting, aerospace and finance and banking.

Employers include:
- Accenture
- AgustaWestland
- BAE Systems
- DSTL
- Intel
- Motorola
- OC Robotics
- the Stock Exchange.

Programme overview

Computers are the universal technology of the 21st century. Computer systems engineers combine expertise in electronic engineering with advanced knowledge of computer hardware and software. They are interdisciplinary experts with skills beyond those of a graduate of either electronic engineering or computer science alone. They apply their skills to the design of systems ranging from the embedded microprocessors in modern mobile devices, such as smart phones, through to high-performance computing. Graduates who have an in-depth background in this rapidly advancing interdisciplinary field are well placed for interesting and rewarding careers at the interface of engineering and computing.

This programme provides the skills and specialist knowledge needed to work in this field. Students develop their systems level design skills using industry standard programming and hardware design languages, operating systems and applications. Students are introduced to state-of-the-art digital technology, such as high-performance gate arrays. In addition to a thorough grounding in modern computer systems and programming, students can also study specialist units on topics such as advanced digital communication systems, computational intelligence and electronic design. This exciting programme produces graduates who will be at the forefront of developing the computer systems of tomorrow.

Practical work & projects

Engineering laboratory classes are a feature in all years of the programme. Semester-long, industry focused group and individual projects develop crucial technical, teamwork, business and management skills. Projects can include computer systems design and integration, information systems and interfaces. Individual projects can be linked to industry or be based in one of the Department’s research groups.

“...the most interesting and rewarding parts of the programme have been the laboratory experiments, the mouse race and the group design project. They give a deeper knowledge on the theory we were taught in lectures and a taste of what will follow in our careers.”

Menelaos Demetriou, MEng (Hons) Computer Systems Engineering
Computer Systems Engineering degree programme structure

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<thead>
<tr>
<th>Year 1</th>
<th>Semester 1</th>
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<tr>
<td></td>
<td>Introduction to programming in MATLAB</td>
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<td></td>
<td>Electronic lab tech &amp; professional engineering practice 1</td>
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<tr>
<td></td>
<td>Engineering physics</td>
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<td></td>
<td>Digital networks &amp; protocols</td>
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<td></td>
<td>Digital audio &amp; signal processing</td>
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<tr>
<td></td>
<td>Structured programming</td>
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<td>Systems requirements &amp; design</td>
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<th>Year 2</th>
<th>Semester 2</th>
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<tr>
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<td>Signals, systems &amp; communications</td>
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<tr>
<td></td>
<td>Microprocessors &amp; interfacing</td>
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<td></td>
<td>Digital electronics</td>
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<td>Energy systems &amp; the environment</td>
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<td>Mathematics 2</td>
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<td>Communication principles</td>
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<td></td>
<td>Principles of radio &amp; optical transmission</td>
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<td></td>
<td>Group design &amp; professional engineering practice 2</td>
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<tr>
<td></td>
<td>Control systems</td>
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<td></td>
<td>Systems requirements &amp; design</td>
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Optional industrial placement

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<tr>
<th>Year 3</th>
<th>Semester 1</th>
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<tr>
<td></td>
<td>Fundamentals of computer graphics</td>
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<tr>
<td></td>
<td>Digital networks &amp; protocols</td>
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<tr>
<td></td>
<td>Digital audio &amp; signal processing</td>
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<tr>
<td></td>
<td>Parallel computing: Digital communications, Radio &amp; optical waves for communications, Microelectronic systems, RF &amp; microwave circuitsSpacecraft systems engineering</td>
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<th>Year 4 (MEng only)</th>
<th>Semester 2</th>
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<td></td>
<td>Group business &amp; design project</td>
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<td>Individual computer systems engineering project</td>
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Optional industrial placement

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<th>Year 4 (MEng only)</th>
<th>Semester 1</th>
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<td></td>
<td>Digital image processing</td>
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<td></td>
<td>Computational intelligence</td>
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<td></td>
<td>Satellite, terrestrial &amp; mobile communication systems</td>
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<tr>
<td></td>
<td>Safety-critical computer systems, Optical devices &amp; communications systems, Terrestrial/space remote sensing &amp; sat-nav systems</td>
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Key features

- In-depth coverage of the hardware and software aspects of computer systems including software engineering, operating systems, computer graphics, digital design and computer architecture.

- The combination of fundamental electronic and electrical engineering modules together with computer-systems engineering expertise ensures flexible career options.

- Leading-edge research feeds directly into specialist modules including microprocessor-system design and digital media systems.

“The University of Bath was the only university I applied to that cared about both my academic and personal development equally, and this was a major influencing factor for me. I study a programme that at times can be difficult but provides so much support that it’s never felt overwhelming and has been ultimately enjoyable. I’ve been given opportunities to do things I never expected to do or even knew existed!”

Simon Tasker, BEng (Hons) Computer Systems Engineering with placement
Integrated Mechanical & Electrical Engineering

UCAS Codes: HHJ6, 4 year MEng without placement
HH3Q, 5 year MEng with placement

Programme overview

21st century industries and research laboratories need graduates with multidisciplinary skills who are able to immediately join teams working on complex projects. This Integrated Mechanical & Electrical Engineering (IMEE) programme has been designed in collaboration with industry to meet this need. The IMEE programme achieves this aim without sacrificing the intellectual rigour of a single-discipline programme.

This programme’s first two years combine the core engineering sciences of mechanics, materials, electrical and electronic systems and circuits, all integrated into coordinated project and laboratory work. In years 3 and 4, further core subjects and chosen options are studied in depth, culminating in major group and individual projects. The IMEE programme also develops technical and managerial teamwork skills. A unique feature of the programme is the study of applications beyond the boundaries of traditional mechanical and electrical engineering. Industrial sponsorships and bursaries are available, indicating the exciting employment opportunities open to graduates of this degree programme.

Practical work and projects

Engineering laboratory classes integrate both electrical and mechanical engineering in years 1 and 2. Robotic challenge, design case study, basic system prototyping, and the Bath mouse race are amongst project activities in these years. In study years 3 and 4, semester-long, industry-focused group and individual projects develop essential technical, teamwork, business and management skills. Recent group and individual projects have included systems and hardware-level designs for robotics, mechatronic and intelligent machines, autonomous aria vehicle (UAV), landmine detection, 3D printing, formula student car and submarine.

Career opportunities

The career prospects for IMEE graduates are excellent and varied. The programme has been designed in consultation with leading industrial partners to make sure that future graduates meet the requirements of 21st century engineering industries. These partners include:

- Jaguar Land Rover
- OC Robotics
- Rolls Royce
- Reed Hycalog
- BMT Group
- Molins ITCM.

“The programme is ideal for anyone who wishes to study more than one engineering discipline and get the ‘best of both worlds’. The programme will make you highly employable; gaining knowledge in both Mechanical and Electrical engineering means you will stand out even more.”

David Angell, MEng (Hons) Integrated Mechanical & Electrical Engineering with placement graduate
Integrated Mechanical & Electrical Engineering degree programme structure

### Semester 1

**Year 1**
- Mathematics I
- Circuit theory
- Solid mechanics I
- Thermodynamics
- Design materials and manufacturing I

**Year 2**
- Electromagnetics
- Modelling techniques I
- Electronic devices and circuits
- Digital systems design
- Design materials and manufacturing III

### Semester 2

**Year 1**
- Mathematics II
- Digital electronics
- Solid mechanics II
- Design materials and manufacturing II
- Robotics and mechatronics

**Year 2**
- Signals, systems and communications
- Modelling techniques II
- Electrical systems and power electronics
- Fluid mechanics
- Integrated control system design

### Optional industrial placement

**Year 3**
- Integrated engineering
- Control engineering
- Power electronics & drives

**Year 4**
- Robotics engineering
- System modelling & simulation

### Key features

- Accredited by both the Institution of Engineering & Technology and the Institution of Mechanical Engineers.

- Taught by two world-class Departments: Electronic & Electrical Engineering and Mechanical Engineering.

- An integrated view of engineering, combining mechanical and electrical engineering using extensive industrial case studies.

- New state-of-the-art robotics laboratory for enhanced group and individual projects.

“There is always a lot to keep my mind engaged because of the broad subject range. During my time in the Department I have been fortunate to visit companies such as Airbus and Royal Mail as well as indulging in pizza after evening talks given by companies such as Rolls Royce and BP. There are excellent placement opportunities, a key reason why I chose Bath, and mine has been with Aero Engine controls.”

Melissa Leung, MEng (Hons) Integrated Mechanical & Electrical Engineering with placement
The University

The University of Bath is a campus university, just one mile from the city centre. A campus university means everything you need as a student is within easy reach on one site. It creates a good sense of community and also means that everything is within a ten minute walk from the on campus residences. University of Bath students have access to a range of social and study facilities:

- A £5.5 million student centre offering lots of varied social spaces for students.
- A careers advisory centre that offers help on anything from finding and applying for a job, to interview techniques. They also organise networking events and workshops on employability.
- A £30 million Olympic style sports training village, representing one of the best sports facilities of any university in the country. Supporting traditional sports such as hockey and the more unusual like skydiving.
- A students’ union recognised by the National Union of Students as one of the top three in the UK.
- Over 100 clubs and societies. Choose anything from breakdancing to bell ringing, curry appreciation to cheerleading. Offering travel opportunities such as surfing in Morocco or raising money for charity by climbing up Mount Kilimanjaro.
- Houses the biggest night club in Bath as well as two other bars.
- Access to two banks, a grocery store, dentist, medical centre, a chaplaincy and around ten different places to eat and drink on campus.
- A library open 365 days a year, 24 hours a day, with many books and articles that can be accessed online.
- More than 1,500 computers for student use as well as wi-fi hotspots all over campus.
- The opportunity to learn a language for free alongside your programme, from beginners to expert in up to 11 different languages. With access to the Modern Languages library, which offers an informal way to learn through access to foreign television, films and newspapers.
- Dedicated student support through our Student Services Centre. Offering help from housing contracts to disability advice.
- A range of discounted classes in dance, music and visual arts, along with free practice facilities through the Institute of Contemporary Interdisciplinary Arts (ICIA). They also offer an extensive programme of live performances, exhibitions and concerts.

Am I guaranteed University accommodation as a first-year?
University accommodation is guaranteed for one academic year to all new-to-Bath, full-time students in their first year, provided that they:
- are studying bachelor’s or master’s undergraduate programmes
- have selected Bath as their firm choice
- have accepted their offer and applied online for their accommodation before the guaranteed accommodation deadline in their year of entry.

Where will I live?
We offer 4,000 bedrooms for students at the University of Bath. Three quarters of these are located on campus. Our city campus accommodation complexes are located around the city centre, approximately 2km from the University campus. You can easily get to the campus using the frequent bus services from the city centre. Find out more: www.bath.ac.uk/living

What choice will I have?
We offer a broad range of room types to suit all budgets, with 50% of our first-year complexes now offering en suite accommodation. Most first-year complexes are similarly organised, with 5-18 single study bedrooms grouped around a self-catering communal kitchen (the two fully catered buildings at Polden and Brendon Court have larger kitchen group sizes). The majority of kitchen groups are mixed but you can choose all-male or all-female if you prefer. The demand for certain residences is very high so we cannot guarantee to fulfil all preferences, but every effort will be made to ensure that the fee level and room type are comparable to those of your preferred option. To see which rooms are right for you, browse our accommodation at: www.bath.ac.uk/study/ug/accommodation/types

Online 360 degree room tours
In order to experience what the different rooms/buildings look like please visit: www.bath.ac.uk/study/virtual-tour
The City of Bath

Voted the best city in England (Guardian & Observer Travel Awards), Bath is one of the most interesting, cosmopolitan and vibrant cities in the UK. It is also the only city in the UK to be included in UNESCO’s World Heritage list, named after its famous natural hot spring, popular with the ancient Romans and still enjoyed today.

You can enjoy the same mineral rich waters in the modern Thermae Spa, Britain’s original and only natural thermal spa, with its rooftop panoramic views of Bath’s skyline.

You can enjoy many things in Bath for free as a student, and there’s more to see than just the sites for tourists, with locals enjoying underground nightclubs and boutique shops. When living here, you can enjoy the frequent cultural events, with festivals going on every couple of months, ranging from the International Film Festival to the Jane Austen Festival and the Great Bath Feast.

Bath has everything from high end famous restaurants to cheaper student bars, as well as theatres and cinemas and a large variety of shops. There’s a lot to do in Bath and there are many outdoor activities like boating along the River Avon and the famed Bath Half Marathon.

As well as being a very safe city and famous for the beauty of its Georgian and Roman architecture, the city is also surrounded by classic English rolling hills and picturesque countryside.

Bath is only one mile from campus and can be accessed by a regular bus service, running until 2am, every ten minutes. Bath is strategically placed, with London only 90 minutes away by train and Bristol only 15 minutes by train.

Accommodation in the city

The University has a variety of accommodation available in the centre of Bath, all within easy access of the city’s amenities and on the direct bus route to the University.

Students often find that living in the centre of Bath gives them the chance to take a break from their academic work on campus.
Useful Links

Open Days
We hold two open days a year, which give you a great opportunity to experience student life at the University of Bath.
www.bath.ac.uk/study/ug/opendays

Finance, scholarships and bursaries
You may be eligible to apply for one of many scholarships or bursaries the University has to offer. There are a range of scholarships supported by generous donors who share our pride in student achievement.
www.bath.ac.uk/study/ug/funding

Accommodation
All first-year students are guaranteed accommodation. There are a range of rooms available with options of ensuites. All accommodation is self-catering.
www.bath.ac.uk/study/ug/accommodation

Living costs
To help you with budgeting over the year, we have calculated an estimate of how much an undergraduate year should cost.
www.bath.ac.uk/study/ug/funding/living-costs

Careers
90% of our students get graduate-level jobs on leaving and command salaries about £3,500 above the national average. The Sunday Times ranked the University of Bath in the top 10 for highest graduate salaries at an average of £23,343.
www.bath.ac.uk/careers/prospective

Disability support
The University of Bath has excellent provisions for those with learning difficulties or disabilities from note takers to dedicated support workers. To ensure the correct support, please declare early or contact a member of staff for more information.
www.bath.ac.uk/disabilityadvice

Students’ Union
Be part of our award winning Students’ Union, ranking in the top stream in the country. Offering over 100 sports and societies from curry appreciation to cheerleading.
www.bathstudent.com

Sports development
We want sport to be open to all and have a £30 million complex of facilities available for use by those of all abilities.
www.teambath.com

ICIA - Arts on Campus
The Institute of Contemporary Interdisciplinary Arts (ICIA) organises an extensive programme of live performances, exhibitions, concerts and classes on campus for students. Students have access to cheaper tickets for performances, and on a range of classes such as photography, street dance, DJ skills and samba drumming.
www.bath.ac.uk/icia/home

International students
Over 25% of students at Bath are International, and come from over 100 different countries. There is a range of support from societies and social programmes to academic and financial support.
www.bath.ac.uk/study/international

How to apply

UCAS online application
UCAS is the national admissions service responsible for managing applications to all higher education programmes in the UK.

We recommend that you apply as early as possible, but we guarantee to give equal consideration to all applicants applying before 15 January of your entry year. We will consider applications received after this date if places are available. See full details of application deadlines on the UCAS website.
www.ucas.ac.uk
“All first-time undergraduates studying a full-time course will be guaranteed accommodation for their first year, as long as they apply by the deadline, which is usually the beginning of July.”
Entry requirements

A levels:
MEng: AAA (including A-level Mathematics and normally Physics)
BEng: AAB (including A-level Mathematics and normally Physics)
IMEE: AAA (including Mathematics and Physics)

General Studies A-level is not accepted

International Baccalaureate:
MEng: 36 points overall, with Mathematics and Physics at Higher Level 6
BEng: 34 points overall, with Mathematics and Physics at Higher Level 6
IMEE: 36 points overall, with Mathematics and Physics at Higher Level 6

European Baccalaureate:
MEng: 77%, including Mathematics and Science
BEng: 75%, including Mathematics and Science
IMEE: 77%, including 85% in Maths and Physics

Other qualifications:
We are happy to consider other UK and international qualifications and appropriate work experience.

For the most up-to-date information on entry requirements, please see the undergraduate prospectus online at: www.bath.ac.uk/study/ug/

English language requirements

Non-native speakers of English may be required to provide additional evidence of their English language proficiency. Typical minimum English academic requirements include GCSE, GCE Advanced Level, IGCSE and Cambridge O level English language at Grade C or above. Additional English language tests may be required such as IELTS at 6.5 including 6.0 in each element or PTE Academic at 62 with no less than 59 in any element.

For full details, visit the international office web pages at www.bath.ac.uk/international

You can apply online through the UK national admissions system at www.ucas.ac.uk

Other useful links include:
www.iet.org
www.headstartcourses.org.uk
www.bath.ac.uk/engineering/women

Contact us:
Department of Electronic & Electrical Engineering
University of Bath
Claverton Down
Bath
BA2 7AY

Email: elec-eng@bath.ac.uk

www.bath.ac.uk/elec-eng

Admissions:
Email: admissions@bath.ac.uk
Telephone: 01225 383019

Note: The information in this publication is correct at the time of going to press. However, programme structure details are subject to possible changes in accordance with normal University procedures.