To Discover And Understand.

Electronic & Electrical Engineering.

Undergraduate courses.
Engineering Your Future.
Introducing the Department of Electronic and Electrical Engineering

Welcome to EEE – we are a friendly and approachable Department with committed and enthusiastic staff. Our research-led teaching is at the forefront of current knowledge and we offer a stimulating environment in which to study. Because our staff are working at the cutting edge of engineering science in world-class facilities, you can be sure our courses are continuously upgraded with the very latest developments.

The Department has a strong international reputation in both teaching and research and we are one of the leading EEE departments in the UK.

We interact regularly with industry via our Industrial Liaison Committee, which advises the Department on teaching and research relevant to industrial and professional interests. These industrial links assist us with our curriculum development and influence the syllabus content.

Our facilities are excellent and include the EPSRC National Centre for III-V Technologies and the Rolls Royce University Technology Centre in Advanced Electrical Machines and Drives. There are specialist clean-rooms for semiconductor device fabrication, laser-test laboratories, microwave anechoic chambers, computer-aided design suites and comprehensive fabrication and test facilities for electrical machines and power electronics.

Our new £81 million engineering building – The Diamond – sits at the heart of our campus and provides cutting edge teaching facilities and student-led learning spaces. Within The Diamond, the Department has access to state-of-the-art undergraduate laboratories, including: a large electronics lab; a semiconductor fabrication facility; an electric motors lab; a machine shop; computer labs and a project workspace. These facilities are supported by dedicated teaching and technical staff.

We are proud of the achievements of our staff and students and hope that you will want to know more about us when you have read this brochure, so please get in touch. You can phone or email us for more details, or an appointment to visit the Department, on 0114 222 5382 or eee-rec@sheffield.ac.uk. Full contact details are included on the last page.

Our website contains lots of information on the courses and activities in the Department and can be found at www.sheffield.ac.uk/eee

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“Since the EEE staff work with so many companies, we were always aware of new projects and technologies that were going to come onto the market. During my three years as an undergraduate and then a year as an MSc student in EEE, I was able to use state of the art equipment financed by the vast amount of funding that research brings to the Department.”

Akeel Auckloo, BEng (Hons) Electrical Engineering and MSc Electronic & Electrical Engineering. Currently completing a PhD with us.
Electronic engineers concern themselves with the manufacture, design and management of the electronic circuits and systems that contribute to almost all areas of human civilisation. From popular examples of technology, such as the personal computer, communication satellites and the mobile telephone, to less well known examples, such as semiconductors, nanotechnology and bio-electronics, engineers in this profession seek the invention, enhancement and improvement of electronically based items useful to the world.

On the other hand, electrical engineers are responsible for designing systems that are able to generate and move relatively large amounts of electrical power between points with separations from a few millimetres to miles. One key area of their knowledge is how to use the laws governing electromagnetics to convert energy into motion and back. Examples of their products include machines such as rotary electric motors, power transformers, heaters and lights, as well as the less common fault-tolerant actuators for use in aerospace, electrically powered transport and natural energy converters.

There are significant overlaps between the two professions, particularly in the areas of computing, modelling techniques, measurement and instrumentation. There are also areas of significant difference, such as radio frequency science and power conditioning and control.

However, in general, a good electronics graduate from our Department will be a competent electrical engineer and vice-versa. This is because both sets of engineers will have been taught by us to use the same theories and tools, namely mathematics, physics, electromagnetics, circuit theory, digital signal processing, control theory and computing science.
It takes three years to become a Bachelor of Engineering (BEng) or four years to become a Master of Engineering (MEng). Both degrees give you the skills to become an Electronic or Electrical engineer, and the MEng will build on your research and design abilities.

There are currently over a hundred universities in the UK and most will offer several types of degree. A safe way to see if the degree that you are interested in is a good one is to check if it is accredited by the Institution of Engineering and Technology (IET). For our profession, the IET represents electrical and electronic engineering and related sciences. As well as keeping the country informed about the latest technologies, the IET also sets standards of qualifications for professional electrical and electronics engineers and accredits degree courses in subjects that are relevant at universities and colleges around the world. Crudely translated, accreditation equals quality.

“Via an accredited course you can become a Chartered Engineer and later in your career you will be able to provide the technical, managerial and commercial leadership skills that industry needs to be competitive.”

Stephen Mould, MEng Electrical Engineering
Get your degree from the right place

Since the University of Sheffield has an excellent reputation, your chances of capturing a well-paid job will be dramatically increased. One safe way to judge a department’s reputation is to see how well it is doing in terms of research. Departments with high research incomes will have good reputations since this means that industry and Government are prepared to invest.

The very best engineering departments will have good facilities – not just computers for example, but also specialist laboratories for things like semiconductors, radio frequency measurements and microprocessors. EEE at Sheffield has all these state-of-the-art facilities - and more. Departments like ours, with good research incomes, also attract the best minds and our experts will pass on cutting-edge knowledge to you through their teaching.

“Fresh pairs of eyes can work wonders in helping you look at problems in new and different ways. I can honestly say that it is almost impossible to come away from the students’ presentations without having learned something new every time!”

Simon Kingsley, Chief Scientist, Antenova Ltd.
What our students say

Chris Wright
MEng Digital Electronics

When looking for a place to study I considered a wide range of universities, but Sheffield stood out to me as a university where I could get a good degree and also have a good time. The EEE Department itself is very well structured with a lot of cutting edge research that really interested me. It allowed me to follow both my interests of electronics and computer science and develop a unique knowledge base. This subsequently led me to a varied career.

Whilst giving me a wealth of technical training, EEE also provided me with other core skills. The standing of the University also helped me get a job, as a lot of graduate schemes are starting to only accept students from high ranking and respected Universities. Whilst studying I didn’t participate in any summer placements or year in industry schemes. In hind-sight I wish I had done as this would have accelerated my career and made job hunting a lot easier and more successful.

After graduation I worked at two different companies. A small start-up software company and Siemens (Building Technologies, Fire Safety and Security). The start-up company was one that I started myself with seed funding from a development company. I ran this jointly for two months before moving on to Siemens.

In my first role I worked as a programmer and as a manager. The non-technical skills that I was taught, (e.g. management), along with the purely technical modules, proved invaluable here and definitely allowed me to succeed. The technical experience I gained during my degree also proved valuable. In the technical role I was a developer creating my own code for applications that were under development and auditing code that had been created by other developers.

My second role was with Siemens on a graduate scheme as I felt this would be a better investment at the start of my career than working for a small company. Here I gained a wealth of training whilst doing a technical job. I was a Product and Solutions Engineer (in fire safety and security). I tested and evaluated new technology for suitability for use, provided third line technical support and gave usage advice. This really interested me as, whilst at EEE, my speciality/interest was in the vision and information area, and therefore my job, (working with cameras among other things), was in line with my interests. The other part of my role was to provide solutions; which means I created system designs for non-standard systems, which involved research, design and testing.
Teaching and learning

Our study programmes are designed to make the most of your potential. Teaching is by lectures, problem classes, tutorials, laboratory classes, computing, design and project work.

Project work is an important aspect of the course. Team and individual projects will take place at various stages throughout your studies and involve the analysis, design and construction of a variety of electronic and electrical systems.

For example, our pioneering Sheffield Industrial Project Scheme (SHIPS) gives second-year students the chance to work on real industrial problems in small teams. There are also Faculty-wide project weeks where you work with students from other areas of Engineering on projects, looking at technical and business aspects.

In third year you carry out an individual project, which can involve investigations at the forefront of current research. MEng students undertake a group project in fourth year which is usually linked to another industrial problem.

"Why did I choose this department? Employers are looking for engineers from prestigious universities – and Sheffield is definitely up there."

Steven Laverick, MEng Electronic & Communications Engineering
What our students say

Andy Rose
BEng (Hons) Electronic Engineering with Employment Experience

I responded to an advertisement I saw in the Department for a twelve-month industrial placement with ARM Ltd. Their Sheffield office is home to one of their processor design teams and I worked there between the second and third year of my degree course.

My job title was Verification Engineer. The role mainly centred around writing software in order to either automate tasks or run specific tests to aid the design and verification of a piece of interconnect for a system-on-chip. I also configured a new tool for tracking requirements throughout the project and assessed a new simulator to make sure it was suitable to replace the existing one.

I enjoyed developing my software skills, including learning the languages Python and SystemVerilog and using them to perform tasks. The projects I worked on allowed me to understand how new processes and ideas are developed and implemented at ARM. They showed me how vital it was for all engineers to have strong technical knowledge, combined with good teamwork and communication, in order to deal with problems as they arise on a daily basis within this industry.

Sometimes the work that I was given was challenging for someone of my experience, especially the investigative work. This tested me to get on the right track and make progress. Overall I would say that my twelve month placement was a very useful and worthwhile experience. It helped me to gain new skills and build upon existing skills, which benefitted me during the remainder of my university course and into employment.

I would highly recommend taking a year in industry to new students. You should take time to research the company and the type of job to ensure you get the most out of the experience.

After graduating, I joined nucleargraduates as a Graduate CE&I Engineer (Control, Electrical and Instrumentation). It’s a two year graduate programme during which I have been sponsored by Sellafield Ltd. At the end of the programme I’ll be joining Sellafield Ltd as a full time employee. I’m also studying for a Post Graduate Certificate in Nuclear Technology.

“I had a thirteen month student placement with Cummins Diesel Engines in Darlington. Spending time in industry was the best experience of my degree and laid the cornerstone of my future career.”

Richa Bhuttar, BEng (Hons) Electronic and Communications Engineering with Employment Experience. Graduate employment with Price Waterhouse Cooper.
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<thead>
<tr>
<th>Day</th>
<th>9.00-9.50</th>
<th>10.00-10.50</th>
<th>11.00-11.50</th>
<th>12.00-12.50</th>
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<tr>
<td>Monday</td>
<td>Lecture Electrical Circuits &amp; Networks</td>
<td>Lecture Digital System Engineering</td>
<td>Lecture Mathematics for EEE students</td>
<td>Lecture Computing</td>
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<td>Tuesday</td>
<td>Lecture Electronic Devices &amp; Circuits</td>
<td>Problem Class Mathematics for EEE students</td>
<td>Personal Tutorial/Pastoral Care (alternate weeks)</td>
<td>Lecture System Design Analysis (alternate weeks)</td>
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<td>Wednesday</td>
<td>Practical Laboratory Sessions</td>
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<td>Thursday</td>
<td>Lecture Electronic Devices &amp; Circuits</td>
<td>Problem Class Mathematics for EEE students</td>
<td>Lecture Electrical Circuits &amp; Networks</td>
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<tr>
<td>Friday</td>
<td>Lecture Electrical Circuits &amp; Networks</td>
<td>Problem Class Digital System Engineering</td>
<td>Lecture Digital System Engineering</td>
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<td>Time</td>
<td>Monday</td>
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<td>13.00-13.50</td>
<td>Problem Class Electronic Devices &amp; Circuits</td>
<td>Lecture Engineering Applications of Mathematics</td>
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<td>14.00-14.50</td>
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<tr>
<td>15.00-15.50</td>
<td>Practical Laboratory Sessions</td>
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There are many benefits for you in gaining industrial experience before or during a degree course. It is an opportunity for you to put theory into practice, to learn about workplace culture and to develop the skills and qualities employers are looking for. Work experience will improve your employment prospects and, of course, you will benefit financially from earning whilst studying.

We provide Year in Industry options for our standard undergraduate courses. These enable you to spend a year working in industry as part of your degree and then graduate with a degree title that reflects your work experience. This paid work experience is undertaken in the penultimate year of study, between Second and Third Year, (BEng) or between Third and Fourth Year, (MEng).

For example, if you were following the syllabus for our Electrical Engineering course you would graduate with the degree title Electrical Engineering with a Year in Industry.

EEE has close links with industrial companies who are keen to recruit our students onto placements. We also have dedicated careers staff in the University’s outstanding Careers Service and in our Department, so there is excellent support to secure a placement. Other popular opportunities are paid summer work placements within a professional engineering environment.

As one of the leading EEE departments in the country, opportunities often arise for students wishing to obtain sponsorship for their studies.

“\textit{I had a nine week summer placement at a systems research company in Bedford upgrading an existing autopilot to use improved sensors. I found it to be a massively worthwhile experience and I learned far more than I ever expected, plus I thoroughly enjoyed every minute of it. I found it simply by emailing a CV and expressing my interest in summer work in this field.}”

\textit{Matthew Watson, MEng Electronic Engineering}
Scholarships and Bursaries

Engineering is recognised as a priority subject of strategic importance and attracts additional funding for bursaries to help offset the cost of studying for a degree. University bursaries are awarded on the basis of A-level grades (or equivalent), household income and whether you are part of an outreach scheme. There are further details at www.sheffield.ac.uk/bursaries

Additional scholarship information for international applicants can be found at: www.sheffield.ac.uk/international/enquiry/money/ug

The EEE Department currently offers various scholarships to UK, EU and international students. These recognise the academic achievement of students entering our First Year and subsequently reward continued academic performance. In addition our Anne Bainbridge scholarship is available to our female students.

We are also partnered with the UK Electronics Skills Foundation (UKESF) Scholarship Scheme.

For latest information on eligibility for these EEE awards, please see our departmental website.
What our students say

Thilini Daranagama
BEng (Hons) Electronic Engineering
with Employment Experience

The EEE Department has been ranked amongst the top 5 EEE departments in the UK, so when I received the offer I didn’t hesitate to accept. Over the four years of the degree, I gained a thorough knowledge, both practical and theoretical, in Electronic Engineering. I believe I achieved a degree that would place me in a very competitive position amongst graduates across the UK. A key feature of the curriculum is that, over the first two years, students learn a wide range of modules, covering all aspects of Electronic and Electrical Engineering, rather than specialising in one category. I think this is very important since all these fields are interconnected. Besides, having a general knowledge exposes you to a wider job market.

As an undergraduate, you can choose to do summer placements or a year in industry. Summer placements are either research-related at the University or industry based. SURE (Sheffield Undergraduate Research Experience) is coordinated by the University, the objective being to provide hands-on research experience to undergraduate students who are considering a career in research. I underwent a summer research placement after the second year, which motivated me to progress to a PhD after my first degree. The experience helped with my PhD applications as well.

In addition, I did a year in industry at the Wind Tunnel Operations Department of Airbus UK. This was a truly amazing experience and it really helped to sharpen my interpersonal skills as well as practical engineering knowledge. It all helped me to do great in my final year project too. Having an industrial placement on your CV places you in a better position for securing a graduate job in the present competitive job market. Besides, these placements are well paid and taking a break from studies allows you time to enjoy and relax before the final year. I definitely recommend doing a year in industry and the University Careers Service provides lots of help.

I went on to study a PhD at the University of Cambridge.

Thilini was awarded the Sir Frederick Mappin Medal and Premium in Electronic and Electrical Engineering in recognition of the overall distinction achieved in the final year of her study. She was also awarded the Professor Oliver Butler Prize, in recognition of her performance in her project.

In addition, I did a year in industry at the Wind Tunnel Operations Department of Airbus UK. This was a truly amazing experience and it really helped to sharpen my interpersonal skills as well as practical engineering knowledge. It all helped me to do great in my final year project too. Having an industrial placement on your CV places you in a better position for securing a graduate job in the present competitive job market. Besides, these placements are well paid and taking a break from studies allows you time to enjoy and relax before the final year. I definitely recommend doing a year in industry and the University Careers Service provides lots of help.

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Athena SWAN Bronze Award

EEE Department received the Athena Bronze Award in recognition of our commitment to advancing women's careers in Electronic and Electrical Engineering.
Graduate careers

So what do you do with your EEE degree?

Prospective employers think highly of our Department, and our graduates are much in demand. They are very successful in finding employment in a wide variety of careers, such as electrical, electronic, software, systems, information and manufacturing engineering. Specialisations range from automation to power generation and from communications to manufacturing. Challenging opportunities are on offer in research, design, development and testing, as well as management, production, marketing and sales.

Many of our graduates join the larger electronics companies but there are numerous other engineering opportunities available to you. Engineering graduates are also sought in non-technical fields, such as banking, law and business management.

Our degrees do not only provide you with the knowledge and skills in your chosen specialist area, you will also gain the generic transferable skills employers are looking for. These include team working, time management, presentation skills and initiative.

Yearly feedback tells us that over 90% of our graduates are in graduate level jobs, or in further study within six months of graduating. Examples of organisations employing our students are Arup, ARM, Atkins, BAE Systems, E.ON, GE Energy, Siemens, Rolls Royce, Nokia, GCHQ and Airbus UK.
Entry requirements

If you are studying A-levels, our requirements for entry to First Year are three good passes in appropriate subjects. These must include Mathematics and preferably Physics. Other suitable subjects include Further Mathematics, Chemistry and Electronics. Typical offers are AAA (MEng) and AAB (BEng).

BTEC candidates studying Engineering are also considered, provided they also have a good grade in A-level Mathematics.

Candidates without A-level Mathematics may be considered for our Foundation Year.

Our policy is to consider students from a wide range of different educational backgrounds. Full details are in the online prospectus. Please do not hesitate to contact us if you are in any doubt about the suitability of your qualifications.

Prospective international students are encouraged to visit www.sheffield.ac.uk/international where there is information specific to your country. There is also a link to the University of Sheffield International College, which offers preparation programmes if necessary.

Applicants with special needs

The University of Sheffield welcomes students with a wide range of needs and is committed to responding effectively and appropriately to provide support for every student.
You apply for all our undergraduate courses through UCAS (Universities and Colleges Admissions Service). Application forms and handbooks are available in schools and you can also access the UCAS web site at www.ucas.ac.uk

General information and entry requirements are included in the University’s Undergraduate Prospectus. Copies can be ordered online at www.sheffield.ac.uk/prospectus

Another useful site to visit is www.sheffield.ac.uk/undergraduate which contains abundant information and many helpful links.

Our Accommodation Services information can be found at www.sheffield.ac.uk/accommodation
Which course?

Flexibility and choice

Flexibility is the central feature of our course structure – you can choose your own degree as your interests develop. Although you will apply for one degree specialisation, our flexible course structure means that transfer to a different specialisation is straightforward.

The first two years have a common core for all students. This gives a broad educational base in the subject, from which an informed decision can be made regarding future specialisation.

You will make your final choice of degree specialisation at the end of Second Year. This is also the time to decide whether or not to continue on a four-year MEng or transfer to a three-year BEng programme. Your final choice does not need to be the one originally selected on your UCAS form.

Please see the overview of our courses on page 22, which explains the different titles.

Qualifying as a Chartered Engineer

All our courses satisfy the MEng and the BEng (Honours) standards for Chartered Engineer qualification.

To meet the educational requirements for ultimately becoming a Chartered Engineer (CEng), you will need to complete either a four-year MEng degree course or a three-year BEng (Honours) degree.

MEng degrees are the most direct routes to meet the educational requirements for CEng status. With a BEng (Honours) degree, you must complete a period of “approved” further learning, which might take the form of an “approved” MSc, to bring your educational attainment up to an MEng equivalent level.
Undergraduate degree courses

All our courses are accredited by the Institution of Engineering and Technology

<table>
<thead>
<tr>
<th>UCAS Codes</th>
<th>Course Title</th>
<th>Degree Qualification</th>
<th>Study Period</th>
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<tbody>
<tr>
<td>H610/H613</td>
<td>Electronic Engineering with a Year in Industry with a Foundation Year</td>
<td>BEng / MEng</td>
<td>3, 4 or 5 years</td>
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<tr>
<td>H611/H615</td>
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<td>BEng / MEng</td>
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<td>H602</td>
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<tr>
<td>H620/H621</td>
<td>Electrical Engineering with a Year in Industry with Foundation Year</td>
<td>BEng / MEng</td>
<td>3, 4 or 5 years</td>
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<tr>
<td>H622/H623</td>
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<td>BEng / MEng</td>
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<td>H603</td>
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<tr>
<td>H628/H629</td>
<td>Electrical and Electronic Engineering with a Year in Industry</td>
<td>BEng / MEng</td>
<td>3, 4 or 5 years</td>
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<td>H633/H634</td>
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<tr>
<td>H647/H645</td>
<td>Electronic and Communications Engineering with a Year in Industry</td>
<td>BEng / MEng</td>
<td>3, 4 or 5 years</td>
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<td>H648/H649</td>
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<tr>
<td>H651</td>
<td>Digital Electronics with a Year in Industry</td>
<td>MEng</td>
<td>4 or 5 years</td>
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<tr>
<td>H614</td>
<td>Microelectronics with a Year in Industry</td>
<td>MEng</td>
<td>4 or 5 years</td>
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<td>H616</td>
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<tr>
<td>H6T9</td>
<td>Electronic and Electrical Engineering with a Modern Language</td>
<td>MEng</td>
<td>4 years</td>
</tr>
</tbody>
</table>
Discover The Diamond.

A new building with state-of-the-art engineering facilities to provide the best learning experience for our students.
Andy Harper
MEng Electrical Engineering

With First Year modules, EEE lecturers place a strong emphasis on beginning at a fundamental level that all students can understand and then build upon this as the module progresses and in subsequent years. I found this approach, along with the friendly and supportive staff, to be a teaching model that suited me well. For this reason alone I would highly recommend the department to potential engineering undergraduates.

As a resident on the Isle of Man, I was lucky enough to obtain three summer placements with the Manx Electricity Authority. The opportunity to relate what I learnt in the lecture theatre to real world problems was something I enjoyed. I would advise all students to attempt to gain one engineering placement during their degree as it really opens your eyes to engineering in the real world and helps you decide where to apply for post-graduation. There is plenty of help within the Department and from the Careers Service if you decide to apply for a summer placement or year in industry.

During my final year I began applying for various graduate schemes, and was successful in obtaining an Engineering Graduate position at Arup in their London office.

Sheffield accommodates the large student population well, with friendly locals and lots of cost-friendly things to do throughout the year to fill your time. With the Peak District being only a short bus ride away, it’s easy to escape the hustle and bustle of the city for a relaxing day in the countryside with your mates.

The large number of societies and sports clubs offered by the Students Union makes it easy to try something different and meet new people outside of your course.
If you want to study for a degree with us but you don’t meet the standard entry requirements, this may be the route for you. We welcome applications from students with a wide variety of academic backgrounds. You may have good grades at A-level, but not in the appropriate Maths and Science subjects. Or perhaps you are a mature student with an Access to HE Diploma. The Science and Engineering Foundation Year course has been specially designed to prepare you for degree-level study and will equip you with the skills and knowledge you need to progress to our First Year.

You’ll be taught by specialists in Maths, Engineering and Physics and you’ll undertake specific project work to enable you to progress onto, and excel in, your degree with us. You’ll also gain practical skills and experience through a varied programme of teaching and learning. Throughout, a dedicated academic tutor from EEE will be there to support you every step of the way.

Please visit the Science and Engineering Foundation Year website [www.sheffield.ac.uk/sely](http://www.sheffield.ac.uk/sely) for detailed information.

“EEE is great for students with an active interest in all things relating to technology. I was a Cadet with the Royal Air Force and they funded my University course with a bursary. Through this I have a guaranteed job following graduation.”

Lauren Kerslake BEng Electrical and Electronic Engineering with a Year in Industry
Overview of courses

During the first two years everyone learns the fundamentals of Electronic and Electrical Engineering: analogue and digital electronics, electrical machines and energy, signals and communications, physical electronics, semiconductors, mathematics, and programming microprocesses. You will also develop your practical skills in the Diamond’s laboratories and undertake a range of hands-on projects. In addition, we help you to develop your communication skills and to gain experience of working in teams.

The understanding of the relevant engineering principles that you gain in the first two years will allow you to pursue any of our degree programmes. You must apply for one of the degree titles that we offer, (see below), but you will have the opportunity to change to another up until the end of the Second Year, by which time you will know which parts of the subject you enjoy and want to follow.

During your Third Year, (and Fourth Year on the MEng programmes), you will study subjects that are core to your chosen degree and you will undertake significant project work as well as modules concerned with engineering management, (you will also be able to choose other modules to study that may not be related to your core degree). The individual courses that we offer are:

**Electronic Engineering**

Electronic Engineering is a very broad subject area that is concerned with using electricity and circuits to transfer, manipulate or transform information. It encompasses computer hardware, analogue circuits, communication systems, power electronics, semiconductor devices and optoelectronics. Many courses are designed to specialise in one of these areas but this course is designed to provide you with a sound base of the knowledge and skill that underpins the whole Electronic Engineering subject area.

**Electrical Engineering**

Electrical Engineering is a wide-ranging area that is concerned with using electricity to transform, manipulate and transfer energy. An electrical motor, for example, changes electrical energy into mechanical energy. Core topics include power systems, power electronics, electrical machines and drives, motion control systems and energy utilisation. You will graduate with a thorough understanding of electrical and electromechanical engineering technologies, analysis and design methods for power and digital electronic circuits, power systems and electromechanical drive systems.

**Electrical and Electronic Engineering**

In some cases you may want a degree that provides the broadest possible coverage of both the electrical and electronic disciplines and to keep your options as open as possible. On this course you will study modules that are core to both the Electronic and Electrical Engineering courses. It gives you the opportunity to specialise in those areas that you find interesting or which might lead to a career which suits you.

**Electronic and Communications Engineering**

Electronic and Communications Engineering is concerned with wireless transmission and it underpins many of the everyday activities that we all take for granted, such as listening to TV or radio, cooking a snack in the microwave oven, text messaging, shopping with a credit card, the internet and air travel. Core topics include antennas and
radiation, modulation and information coding, high frequency circuits, electromagnetic compatibility and wireless data transmission. You will graduate with a wide understanding of radio and communication systems.

**Digital Electronics**

Digital Electronics seeks to provide you with a wide range of modern electronic system design competencies in a rapidly changing and increasingly digital world. On this course you will study subjects from basic electrical behaviour through signal processing and programmable systems up to the programming languages that are used to design hardwear circuits. In the final years, you will study a set of advanced topics that are focused more towards digital systems and design: digital signal processing, advanced computer architectures, VLSI design, hardwear description languages, computer communication, and operating systems.

**Microelectronics**

Microelectronics develops your electronic engineering expertise towards an understanding of the properties of the semiconductor devices and circuits that underpin current and future electronic systems. Such an understanding is crucial in developing high frequency circuits for data processing and communications, as well as giving light sources that can be used to display information clearly or transmit it quickly.

The course will equip you with both the practical skills in fabrication, working in a clean room, as well as theoretical understanding, allowing you to work in the semiconductor industry, either in silicon based technologies or in more exotic materials. Core topics include integrated circuit technology and basic VLSI design, describing the practical issues in making circuits on the micro- and nano-scale. Electronic device design, particularly for transistors and including their performance at high frequencies is also examined, as are the issues in creating semiconductor light emitting diodes and lasers.

**Year in Industry Courses**

All the above courses are available with a Year in Industry during your penultimate year. This gives you the opportunity to spend a year
working full-time for an engineering company, putting your academic study into context. You pay a reduced fee to the University during that year and receive a salary.

Whilst it’s up to you to apply for placements, there is lots of advice and support from specialist staff who will work with you through the recruitment process. This is available from both the Department and our colleagues in the Careers Service.

**Electronic and Electrical Engineering with a Modern Language**

It is increasingly important for engineers to have an international perspective. Our courses give students an opportunity to study abroad in the Third Year. Under the Erasmus programme, you would have the option of studying at one of the high quality universities with which we have an exchange agreement, (we have arrangements with France, Germany and Spain). You will need to achieve an acceptable standard in both your core courses and language course in the second year if you wish to study abroad.

During the First and Second Years of the course, your studies will be mainly common with all other EEE students but you will take language modules. By the end of the Second Year, you will have covered the same core material as other students and can either continue with a third year in a European exchange university, or transfer to one of our standard courses and remain in Sheffield.

On your return from abroad, you will undertake an individual research project and your final year modules will be selected to match those taken abroad, in order to ensure that you have covered a balanced curriculum.

**Study Abroad Opportunities**

We also provide the option of allowing students to study abroad, where the teaching is undertaken in English. You cannot apply directly to these (MEng only) courses but you can transfer on to them during your First or Second Year of studies and your study year abroad will be recognised in your degree title.

A student who wishes to follow this route must find a University that is able to accept them for a study year and agree a course of study with the University and our Year Abroad Tutor. The results gained while at the host University substitute for your Third Year results.

“After choosing electronics at A-level I thought it would be great to try it as a degree and have loved every second of it. I believe if you’re willing to commit yourself and explore every avenue then engineering is definitely the way to go.

I received an annual scholarship from the UK Electronics Skills Foundation, (UKESF) and through them I secured a placement with Fujitsu, which was brilliant. I made some fantastic friends, earned money and experienced what it was like to work for a real company. After graduation I already have a job at the Science and Technology Facilities Council in Microelectronics, but I fully intend to stay in touch with the University.

Sheffield is a fun place. There’s always something new to do even when you think you’ve seen it all. I’ve done the whole London thing, it’s fun but Sheffield has something extra to it. The accommodation is fantastic, the area is safe and quiet and the Peaks are right around the corner, not to mention the nightlife, the campus and the people who live here. You will never meet people as cheerful as you do in Sheffield!”

Connor Timms, BEng Electronic Engineering
How to contact us

If you have any queries or require further information, we will be very pleased to help you. Contact our Undergraduate Student Recruitment and Admissions Officer, Alison Bertie:

Department of Electronic & Electrical Engineering
The University of Sheffield
Mappin Street,
Sheffield S1 3JD

T: +44 (0)114 222 5382
E: eee-rec@sheffield.ac.uk

www.sheffield.ac.uk/eee

Department Open Days

When you make an application to study with us we will normally invite you to attend an interview before an offer is made. This is an excellent opportunity for you to learn more about our courses, look around our Department and chat informally with staff and students. You will also get a flavour of the broader University environment when we take you on a short trip to view the area. Most of our students live in the very pleasant and leafy suburbs on the west side of the city and our day includes a look at the Student Village.

All our Departmental Open Day events include a free buffet lunch. Whether you are attending for interview or just want to visit EEE, we offer a relaxed, informal atmosphere in which to have all your questions answered. Parents or guardians are welcome to accompany you, we just need to know in advance for organisational purposes.

Pre-Application Open Days

Our University holds more general pre-application open days over the summer. If you’re making a decision about where to study and spend the next few years of your life, it makes sense to check the place out.

There’s a chance to find out information about many areas of student life from admissions, student accommodation and finance, through to careers, sports facilities and our Students’ Union. These days include a relatively short opportunity to meet EEE staff, but you can attend a brief talk, ask us questions and get an idea of what we’re about.

Sheffield is a vibrant city and the University’s campus is right on the edge of the centre, so you can look around while you’re here.

Travel

By Car

Unless you know the city well, we recommend that you approach Sheffield by the M1 if travelling from the north, east and south. From the west, use the A57 Snake Pass, via Glossop. The recommended main routes to and from the University are indicated on the Central Sheffield section of the location maps.

Parking on campus is limited, but there are some public parking areas within walking distance, including QPark on Rockingham Street. Alternatively, you can park at Sheffield’s famous Meadowhall Shopping Centre and catch Supertram into the University precincts.

By Train

Sheffield is on the main rail network with good services to most parts of the country. You can walk from the railway station to the Department in about 20 minutes. Alternatively, take the tram from the station to the University tram stop.

Visit the following website for detailed travel information, including our University ‘map pack’: www.sheffield.ac.uk/travel
Every effort has been made to ensure the accuracy of the information given in this publication, but the University can accept no responsibility for any errors or omissions. University courses are continually reviewed and revised and there may be some changes between the date of publication of this brochure and the time you begin your course.

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