



UNIVERSITY OF  
BIRMINGHAM

SCHOOL OF  
ENGINEERING

# ELECTRONIC, ELECTRICAL AND SYSTEMS ENGINEERING



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# Welcome

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Are you fascinated by the fast-moving world of satellites?  
Do you want to know how space weather affects radio systems on Earth?  
Do you want to get up to speed on autonomous vehicles?

If the answer to one or more question is 'yes', then you've come to the right place. Welcome to the Department of Electronic, Electrical and Systems Engineering (ESEE) at Birmingham.

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## WHY STUDY HERE?

Because in terms of teaching and research, we are among the very best. Our track record speaks for itself: It was our research that enabled the development of radar and the microwave oven; we were the first UK university to run a fleet of hydrogen cars to exploit greener fuel, and thanks to us the global digitalisation of the railways is going full steam ahead. No wonder we are one of the UK's top ten universities for ESEE and that our graduates are in huge demand.

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## THE LEARNING ENVIRONMENT

ESEE is benefitting greatly from ongoing and substantial investment in new teaching spaces. Labs are kitted out with brand new, hi-tech equipment – supplied by multinational companies like National Instruments – and extensive key software through our partnership agreement with Microsoft. Here you will be taught by staff who are global experts in their fields and those with strong links to industry, who will provide you with the creative, problem-solving and technical skills needed to undertake your final-year individual project. As well as specialised labs with state-of-the-art facilities such as simulators, you will also get to work with internationally leading research groups. Also opportunities to work in industry provide real-world experience.

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## FLEXIBLE DEGREES

Our degree programmes provide a breadth of study opportunities, with pathways spanning a diverse range of topics: robotics, interactive systems, digital communications, energy and power, condition monitoring, system capacity and systems engineering in the rail industry. From building robots to team-building exercises, our modules offer you variety, stimulation and challenge. Because we want you to study what you're most interested in, our degree programmes are flexible, allowing you to specialise gradually as you develop your skills and passions.

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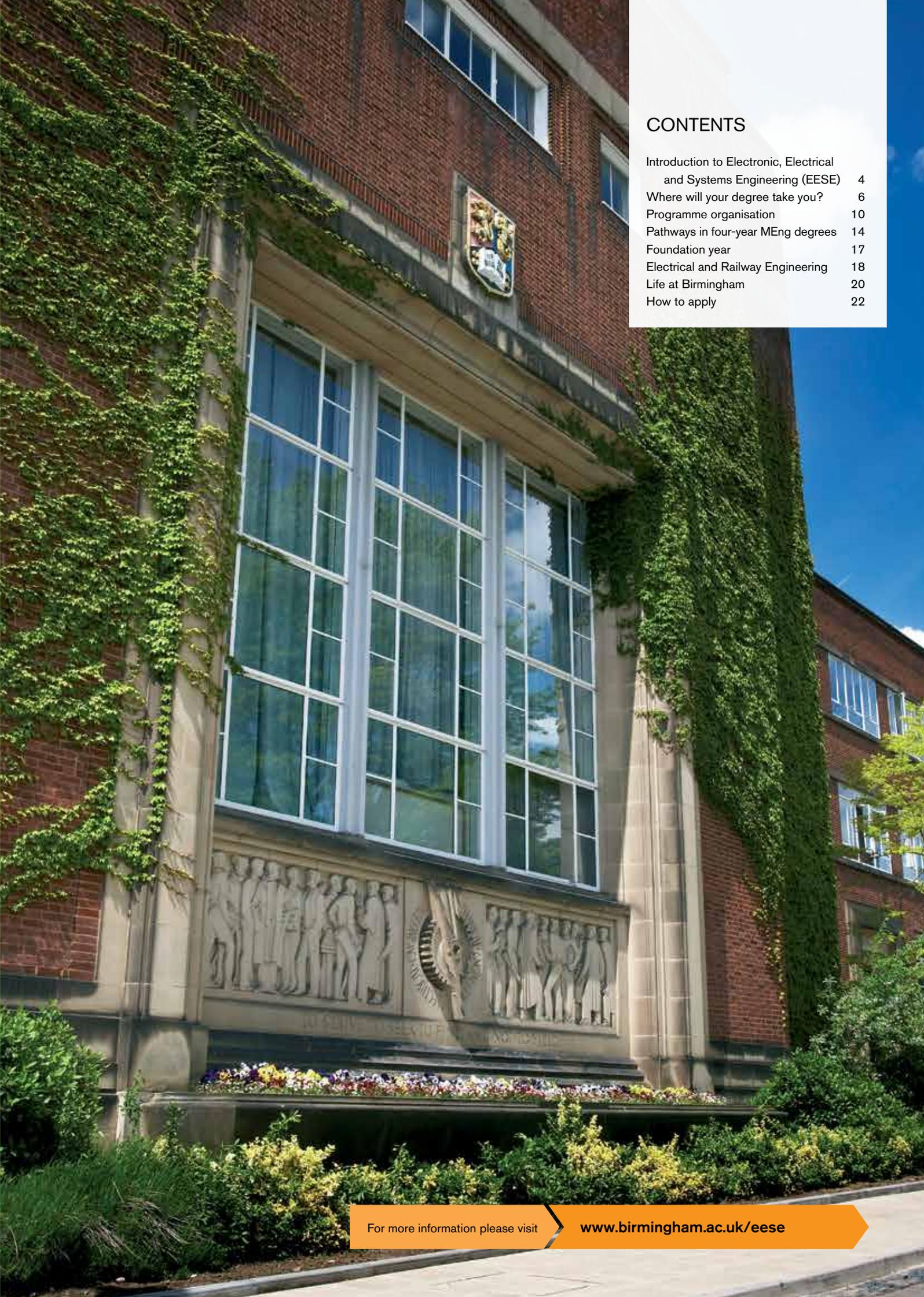
## PIONEERING GLOBAL RESEARCH

As one of the UK's top research universities, everything we do is innovative, cutting-edge and industry-driven. Our research (86% of which is rated world-leading or internationally excellent) feeds into our undergraduate programmes: the work we are doing on terahertz (THz) radar for autonomous vehicles, for example, and the technologies we've developed to make rail travel faster, safer and more efficient. You might do groundbreaking research yourself: ten years before New Street Station was redeveloped, a group of students drew up plans for a new-look design and presented them to industry.

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## OPENING DOORS TO AN EXCITING FUTURE

Our ESEE degree programmes are fully accredited by the Institute of Engineering Technology, paving the way for you to become a chartered engineer. A good degree from Birmingham opens doors across all areas of industry. From Jaguar Land Rover and Network Rail to Siemens and the Ministry of Defence, national and international companies and organisations value the fact you will have been trained to work in a future we can't yet see.



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For more information please visit

[www.birmingham.ac.uk/eese](http://www.birmingham.ac.uk/eese)

# Introduction to Electronic, Electrical and Systems Engineering (EASE)

Since our first Professor of Electrical Engineering, Gisbert Kapp, took up his post more than a century ago, the world has become a very different place. More exciting. More challenging. More out-of-this-world. And we, here at Birmingham, have helped to shape it.

Electronic, electrical and systems engineers are involved in the design and development of technology that has become vital to all aspects of modern living – from the telecommunications networks that keep us connected 24/7 to the computer and digital networks that send billions of bits of data streaming around the globe.

It is thanks to engineers that the stuff of science-fiction films – robots, drones, satellites and smart cars – is now a reality, and it will be engineers like you who continue to drive us into a future we can hardly envisage.

Many of the things people associate with scientific invention are, in fact, feats of electronic, electrical and systems engineering (EASE). The engines and environments in cars, trains, ships, spacecraft and aeroplanes are all controlled by electrical systems. So, if you've enjoyed maths and science at school, it doesn't mean you have to do maths and science at university – you can study EASE.

Choosing the EASE route will give you the chance to learn about all levels of design; from transistors, transmission media and electromagnetic devices to the organisation and control of large-scale systems such as computers, communications networks and energy distribution infrastructure. You can work on tiny scales, too, such as neural interfaces for prosthetic limbs and micromachining. Our stimulating degree programme gives you a solid grounding in the underlying physical and mathematical principles of the subject, along with a thorough overview of electronic technology and its applications.

One of the most exciting applications, today and in the future, is the rejuvenated rail industry. Railway projects are booming and we are at

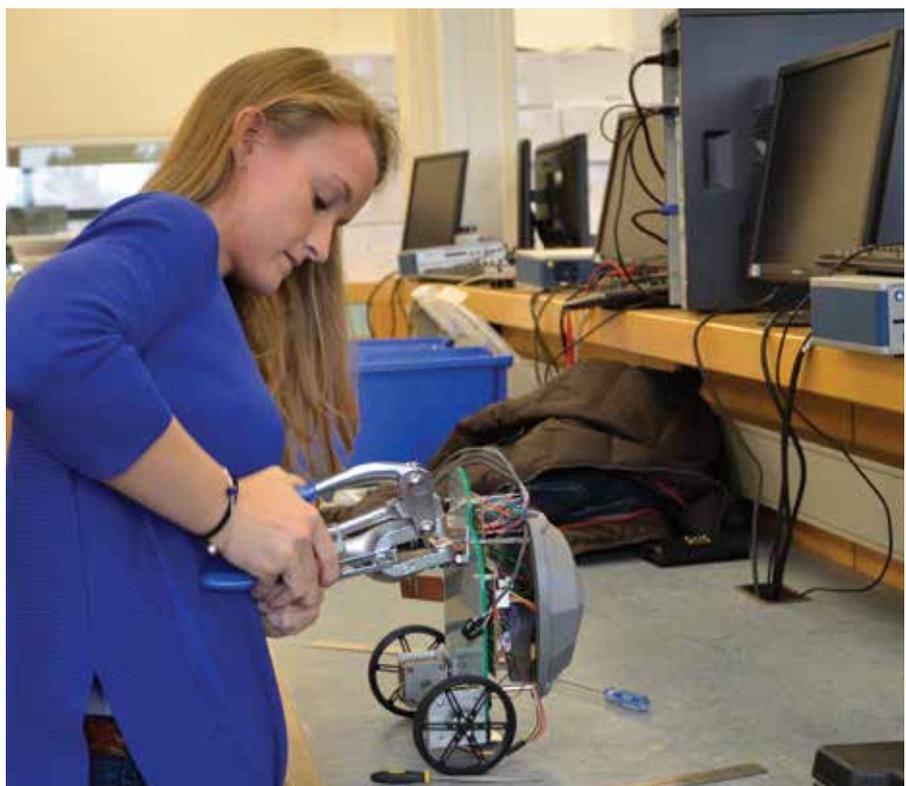
the forefront of developing and implementing technology to manage rail systems across the world. Our Railway Engineering programme is the only one of its kind in the UK.

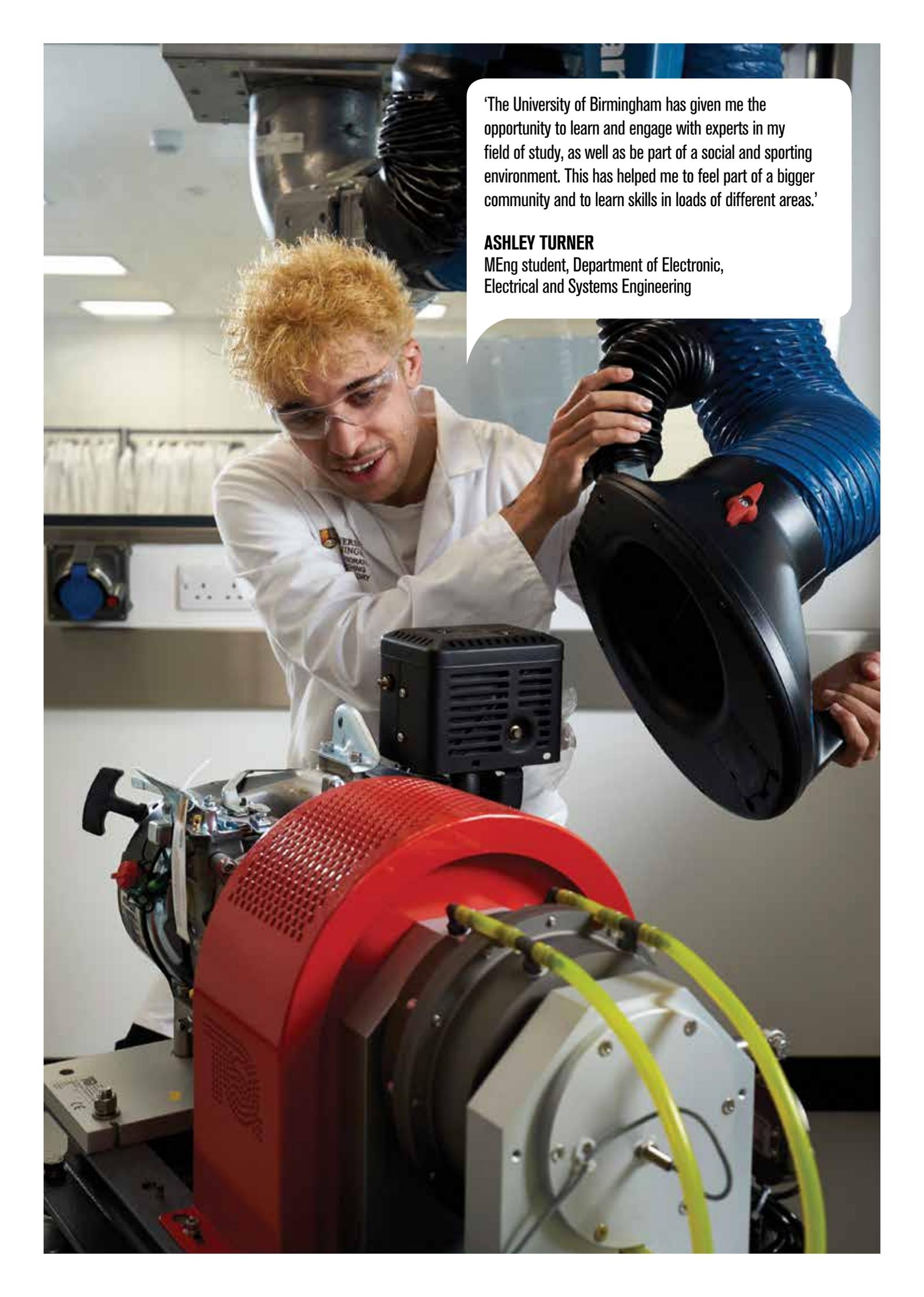
As well as being an extremely broad subject, EASE is also one that encompasses a range of disciplines. Rooted in applied physics, mathematics and computing, it includes elements of psychology and materials, medical and biological sciences.

Some of the key problems and opportunities of the 21st century – power, communications, transport, healthcare and human-systems integration – can only be addressed by

engineers. That means a good degree from Birmingham will open a host of exciting career doors across the world.

Yet even when you have chosen your career path, you can't be certain of the working and technological environment in which you'll be operating. Change is happening fast – and it's likely to happen faster in future. That is why our overriding aim here at Birmingham is to equip you for a world you don't know – a world where technological advancement will be driven by people who don't just know how to use an up-to-the-minute industrial system, but who can design an even better one. People who are engineers. People like you.



A young man with curly blonde hair and safety glasses, wearing a white lab coat, is working in a laboratory. He is focused on a blue robotic arm that is holding a black, dome-shaped component. In the foreground, there is a large red machine with a perforated top and a grey base with yellow cables. The background shows a clean, industrial-looking lab environment with white walls and equipment.

'The University of Birmingham has given me the opportunity to learn and engage with experts in my field of study, as well as be part of a social and sporting environment. This has helped me to feel part of a bigger community and to learn skills in loads of different areas.'

**ASHLEY TURNER**

MEng student, Department of Electronic,  
Electrical and Systems Engineering

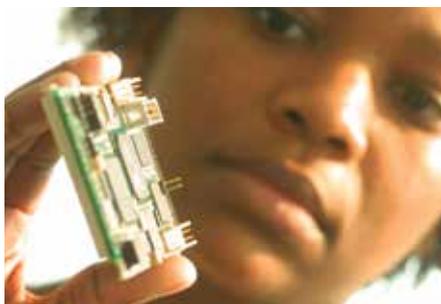
# Where will your degree take you?

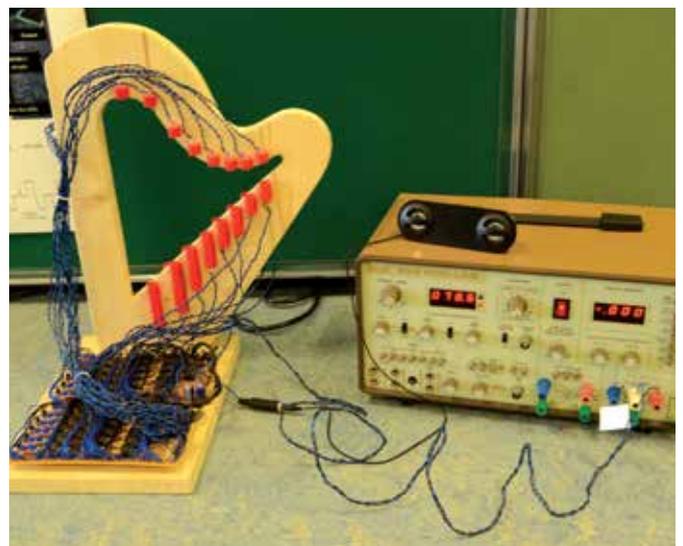
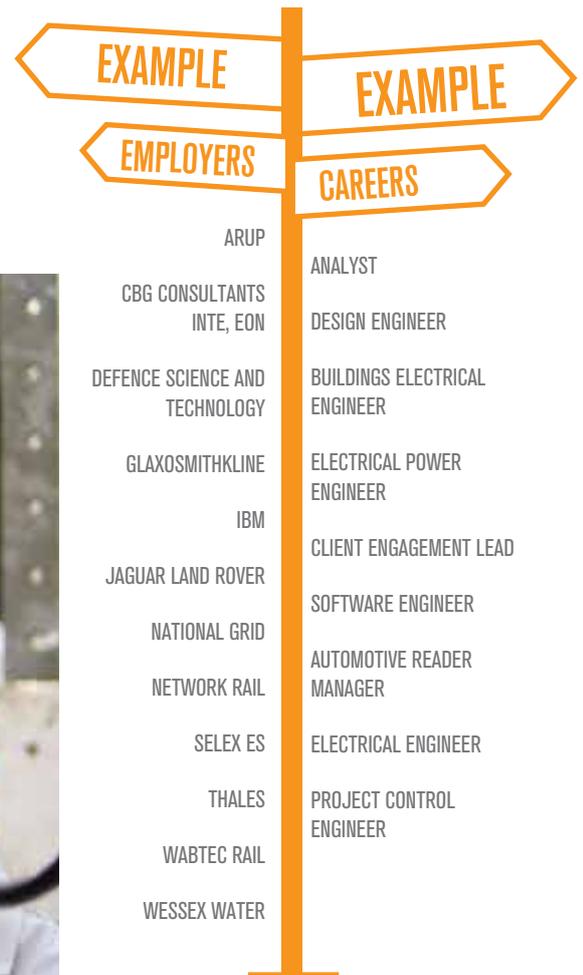
Do you know where you'll be in five, ten, 20 years' time? Your degree will equip you with the creative, professional and technical skills to lead change and innovation in a future which we know little about for certain, other than that the technologies and systems we use will not be the same as they are today.

Some improvements will be game-changing and disruptive, some will be evolutionary. The reputation Birmingham has worldwide for the impact and quality of its research means that the people you meet will value your qualification as much as you do. The accreditation our programmes have received for over a quarter of a century provides employers with assurances that our graduates have the qualities they seek. You may be running your own business and recruiting graduates and partners yourself in the not too distant future.

## An industrial year

Whether you have applied for the 'with Industrial Year' degree from the outset or decide to join the scheme once you are here, a year in industry is an invaluable addition you can choose for your degree. You will be involved in serious projects at the core of the company's business, with training and support. We'll be in touch with you throughout the year too. You'll gain experience of applying what you've learned in the early years of your degree to real engineering challenges. You'll come away with a clearer idea of what you want to do. We have strong links with industry, many of the companies we work with will regularly recruit our students. Opportunities are promoted throughout the year and we'll help you through the application process. You will be awarded a Certificate of Industrial Studies which will be shown on your degree transcript.





# Where will your degree take you?

## Continued

### Support from the School

We have full-time staff engaged in industrial liaison as well as academic staff with a wealth of connections to industry. Our student society organises a careers fair in the autumn which is attended by recent graduates. We help you to meet employers, to gain an insider-view of the application process and to find career opportunities. From the very beginning of your degree we will provide guidance in giving presentations, technical writing, preparing your CV and gaining the professional skills expected of a graduate engineer. As well as helping you find your graduate job, we'll also help you with summer placements and year in industry.

### CAREERS

#### Tailored careers support from Careers Network

We provide a wealth of opportunities to develop your career. From your first day at Birmingham to after you graduate, Careers Network is here to help you identify and achieve your individual career aspirations through its wide range of services.

Our dedicated careers team brings you information, advice and guidance tailored to your specific needs. Careers advisers offer one-to-one advice appointments where you can discuss your career plans and explore your options.

Our multi-award-winning work experience team has dedicated internship officers to help find the right work experience for you. Make the most of these opportunities and apply for our Work Experience Bursary Scheme, the Birmingham Undergraduate Internship Programme or one of our successful mentoring schemes.





**FACT**

There are a number of extra-curricular opportunities for students to get involved in projects during their study to increase their practical skills and knowledge. The Hydrogen Locomotive is a yearly project that gives undergraduate students the chance to work with PhD students to develop and improve a hydrogen-hybrid locomotive to meet set specifications. The locomotive is entered into a competition, with students able to demonstrate their work publicly.



'When looking at graduates it is highly important that they are engaged and connected with the working environment and are, for example, aware of the tools that are applied as part of their chosen profession. The University of Birmingham prepares its students with practical hands-on sessions bridging the gulf between academia and industry very well, which in turn is very helpful to the individual candidate.'

**JOHNNY OJEIL**, Director, Arup



## LEARN MORE

See a video from Shifath Nafis, talking about why he chose to study at the University of Birmingham and how the degree programme prepared him for life post-graduation:

[www.youtube.com/watch?v=A8p\\_T6JHqo8](https://www.youtube.com/watch?v=A8p_T6JHqo8)

# Programme organisation

Engineering has many facets: sensing and interacting with the environment in order to control aspects of it; modelling and design; creativity; finding solutions to problems – and, more importantly than ever in today's fast-paced world, driving forward change to solve future problems before they even arise.

Our flexible three-year BEng and four-year MEng courses are structured to bring together all these facets to give you a thorough understanding of electronics-based technology, so that you are equipped to meet the challenges of your individual and group projects – as well as a life and career beyond university.

Digital and analogue technologies and their applications will continue to evolve at lightning speed, so our modules are designed to ensure you can play a leading role in inventing, designing and managing them. At the same time, we will ensure you get a solid grounding in the underlying physical and mathematical principles of electronic, electrical and communications systems.

One of the things that make us special is that we have a shared first year alongside Civil and Mechanical Engineering, giving you the opportunity to gain a deeper understanding of the principles that underpin the wider engineering discipline. In later years you will gradually increase the depth of specialisation. Our programmes are designed to enhance your employability in your area of specialisation. We've obviously got it right because our employability rates are very high.

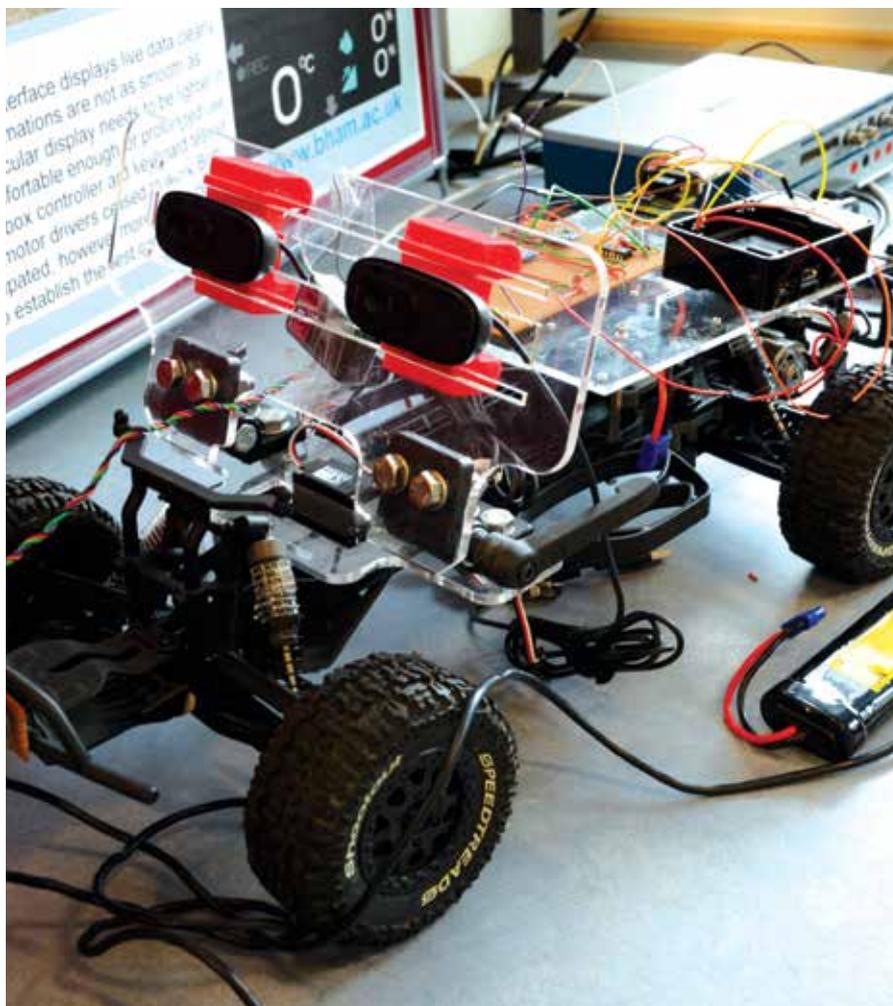
Project work, which is highly valued by employers, is the thread that runs through your degree, underpinned by coursework.

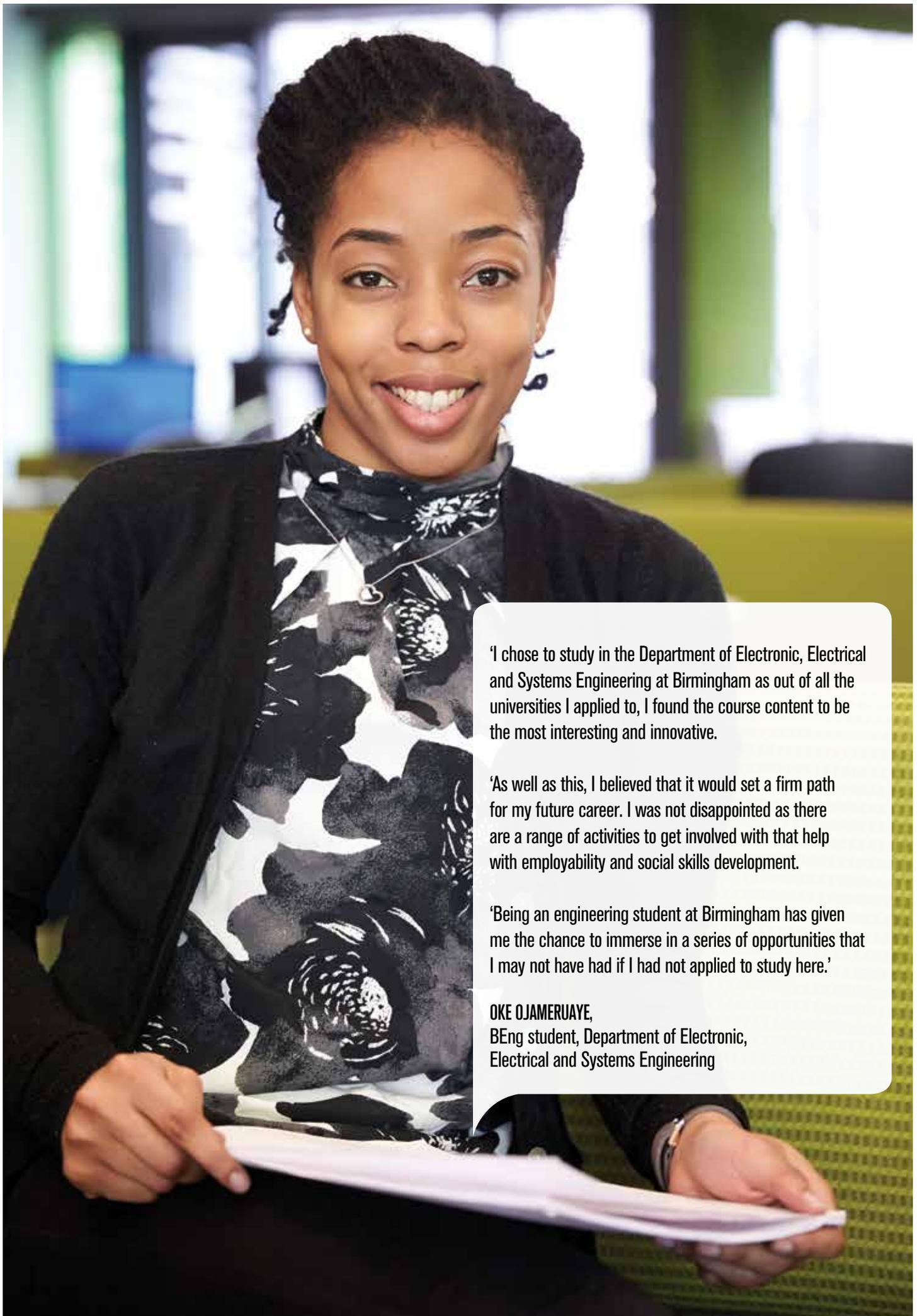
You can sign up for a degree with a built-in industrial year, or you can decide once you're here that you would like to take up the opportunity (and we will help you find a placement). There are many good reasons for spending a year in industry: you get paid, you learn new skills and you return to your studies with renewed motivation. You might also come away with a job offer, as employers use these placements to identify the best next-generation engineers.

You will be taught by staff who are experts in their research fields, staff with extensive industrial connections, research staff and staff with teaching qualifications. We offer a mixture of large-scale lecture tuition, small-group teaching (six students or fewer), and lab and other practical classes. We make extensive use of online learning tools, too, so you can study even when you're not on campus. Courses are assessed by a mixture of exams and coursework.

You will also have a personal tutor with whom you'll have one-to-one progress meetings throughout your time here.

We are a small department within a large engineering school – so you get the best of both worlds. In the first year, you are part of a large interdisciplinary group of students (with whom you'll keep contact throughout your degree), but as you start to specialise you will spend progressively more time within our department. It means you will get to know the staff and teaching assistants well.





'I chose to study in the Department of Electronic, Electrical and Systems Engineering at Birmingham as out of all the universities I applied to, I found the course content to be the most interesting and innovative.

'As well as this, I believed that it would set a firm path for my future career. I was not disappointed as there are a range of activities to get involved with that help with employability and social skills development.

'Being an engineering student at Birmingham has given me the chance to immerse in a series of opportunities that I may not have had if I had not applied to study here.'

**OKE OJAMERUAYE,**  
BEng student, Department of Electronic,  
Electrical and Systems Engineering

# Programme organisation

## YEAR 1

Our combined engineering pathway, with Mechanical and Civil Engineering, is aimed at developing your thinking and skills across academic boundaries. It is also about working with others; putting their imagination to work as well as your own. So, during this first year you will undertake an interdisciplinary group project.

## YEAR 2

This year you will begin to specialise, particularly if you want to go down the track of railway engineering. Your core courses will include digital systems and embedded computing, electronic circuits, devices and electromagnetics, maths for engineering, energy systems and control, communications systems, and software engineering. If you choose the Railway specialisation you will study railway infrastructure and railway traction instead of communications and software systems. In all degree programmes, you will undertake both discipline-specific and interdisciplinary projects, still in groups. One of them could be building your own robot and racing it in the end-of-year challenge!

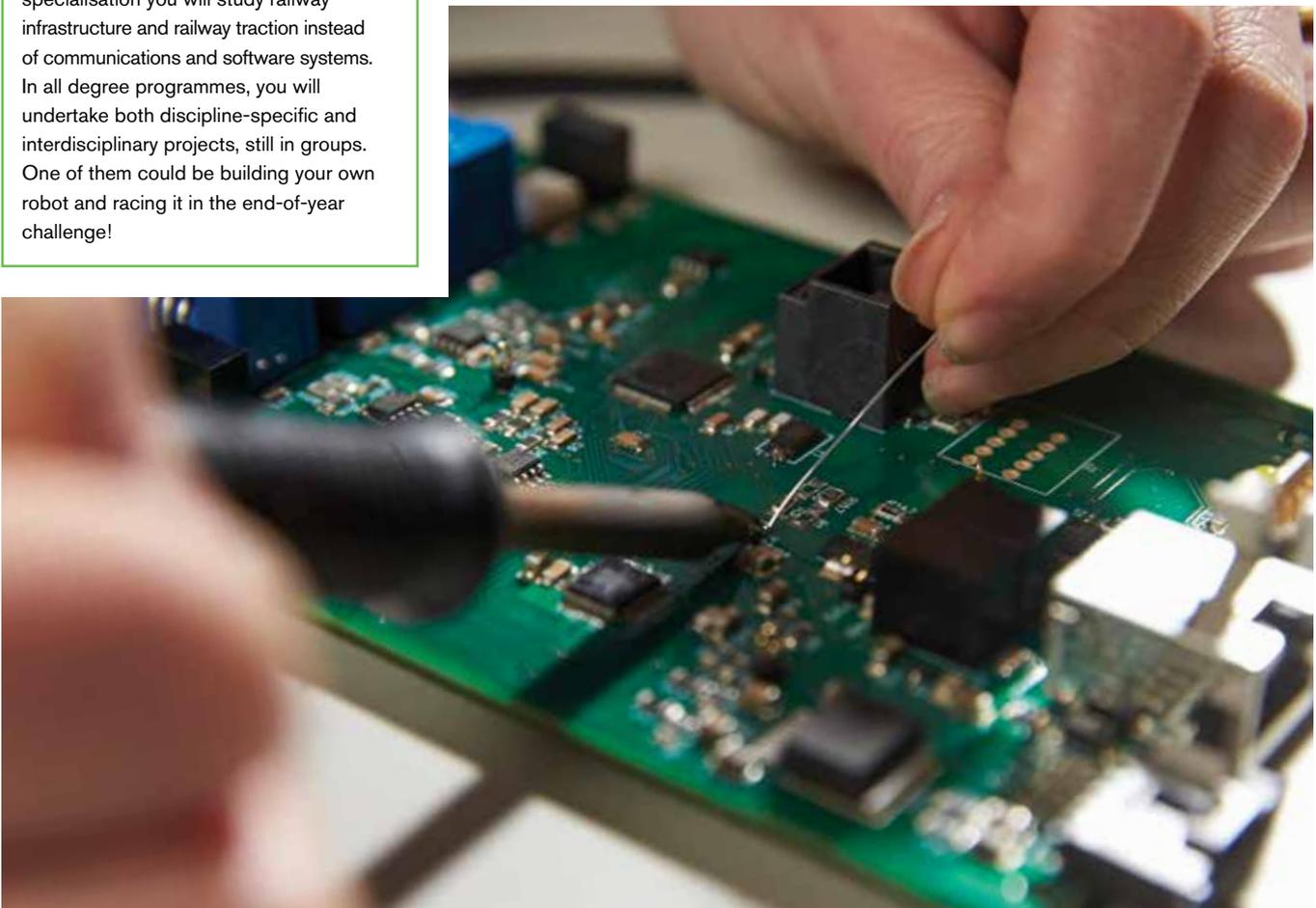
## YEAR 3

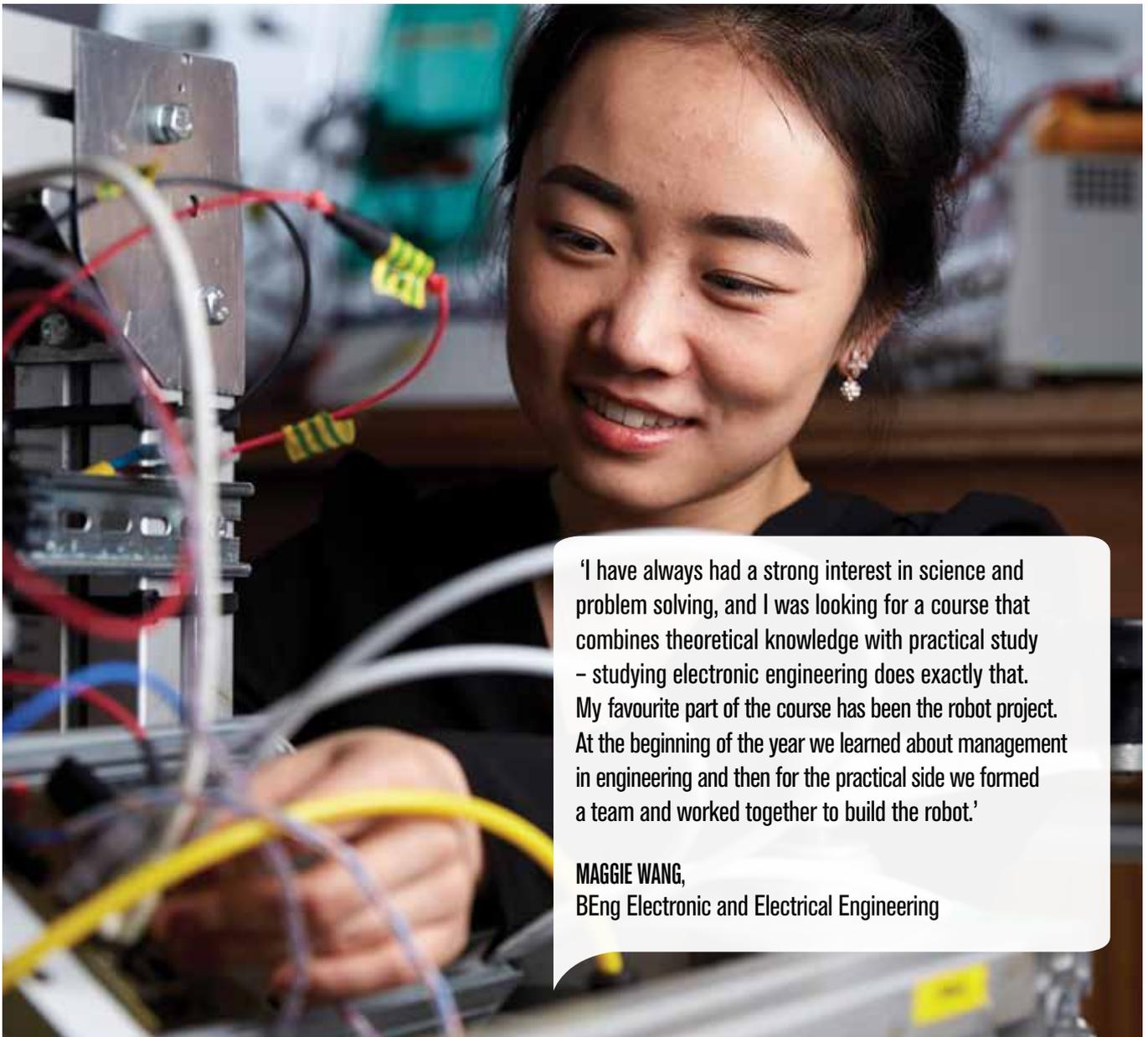
If you are studying for a BEng degree, this is your final year. Now you can really focus on the areas that interest you the most. Module subject areas are shown in the graphics box. You will put the creative, technical, analytical and decision-making skills you have developed into delivering an individual research project as well as a group design project. You will choose options to complete your degree.

If you are on an MEng course, you will take all the courses shown in the graphic and apply your growing expertise to a challenging and open-ended design project. In the past, these projects have included the design of a suitcase that follows you around a railway station or airport, the location of hidden radio transmitters and an automatic balancing broom!

## YEAR 4

This is the final stage for students studying for the MEng degree, and the flagship of our degree programmes. All students carry out an individual research project in close collaboration with an academic supervisor. If you are on the Electrical and Electronic Engineering degree programme, the project and a core course in Digital Design make up the first half of your studies. The second half contains specialised high-level courses within one of three suites; the available suites are Communications Engineering, Power Engineering and Computer Engineering. If you are on the Electrical and Railway programme, modules in electrical power and autonomous systems will be taken alongside your individual research project and rail-specific modules.





'I have always had a strong interest in science and problem solving, and I was looking for a course that combines theoretical knowledge with practical study – studying electronic engineering does exactly that. My favourite part of the course has been the robot project. At the beginning of the year we learned about management in engineering and then for the practical side we formed a team and worked together to build the robot.'

**MAGGIE WANG,**  
BEng Electronic and Electrical Engineering

Year 1	Year 2	Year 3	Year 4
Electrical Engineering	Electrical Energy and Control	Electrical Engineering	Electrical Engineering
Integrated Design Project	Integrated Design Project	Integrated Design Project	Individual Research Project
Mechanics	Circuits, Devices, Electromagnetics	<b>BEng Programme:</b> Research Project and choice of optional modules	One optional module
Fluid Mechanics	Digital and Embedded Systems		For the most up-to-date module options visit <a href="http://www.birmingham.ac.uk/schools/engineering/courses/undergraduate.aspx">www.birmingham.ac.uk/schools/engineering/courses/undergraduate.aspx</a>
Engineering Maths	Engineering Maths	<b>MEng Programme:</b> Compulsory modules on key themes	
Computing	Communications		
Engineering Materials	Software/Systems		

# Pathways in four-year MEng degrees



## RADAR AND SENSING SYSTEMS

Imagine a radar screen where, instead of 'blobs', you see images of the objects detected by the radio waves – from a ship in the ocean to a pothole in the road. Such a terrain-recognition display system might one day soon be part of a standard car, thanks to world-leading terahertz sensing and communications research we are carrying out here at Birmingham. Bridging the THz gap could also lead to developments such as satellite systems to examine atmospheric gases and skin-imaging devices.

Wireless communications and remote sensing underpin most aspects of the modern electronic technologies that are instrumental in shaping the world, and we have long been leaders in radio frequency and microwave research.

This extends to space weather, which can interfere with radio systems. Our Space Environment and Radio Engineering Group (SERENE) has collaborated with the University of Malta to develop a PocketQube pico-satellite – due to launch in 2018 – to study the properties of the Earth's ionosphere, a region of the upper atmosphere ionised by solar and cosmic radiation.

All our research, which brings in about £4 million of funding a year, is undertaken in conjunction with industry: nationally we collaborate with the likes of BA Systems and Jaguar Land Rover, while internationally we work with countries such as China and Brazil.

This is a pathway that will spawn new technologies with applications in areas such as additive manufacturing and micromachining, and lead to careers in almost all industrial sectors, from communications and radar to medical and security.



## RAILWAY SYSTEMS

With the recent boom in high-speed rail and metro projects like HS2 and Crossrail, these are thrilling times for railways – not only in the UK but around the world. This pathway puts you on the footplate of a reinvigorated industry bursting with job opportunities.

Our Birmingham Centre for Railway Research and Education – the biggest in Europe – is a leader in railway science and education, specialising in digitalisation. The new technologies we have developed include a system that allows trains to run closer together, radically improving capacity, and a condition-monitoring system that enables faults to be detected and diagnosed before they fail. The work we do helps drive the future success of railways across the world, from Singapore to Zimbabwe, as a mode of safe, fast, high-capacity and environmentally and customer friendly transport.

Our Railway Engineering degree programme is the only one of its kind in the UK, providing in-depth study into what is happening across the world's railways and working closely with the rail industry. That means lots of trips out and a wide range of equipment, such as a driving cab simulator, with which to learn.

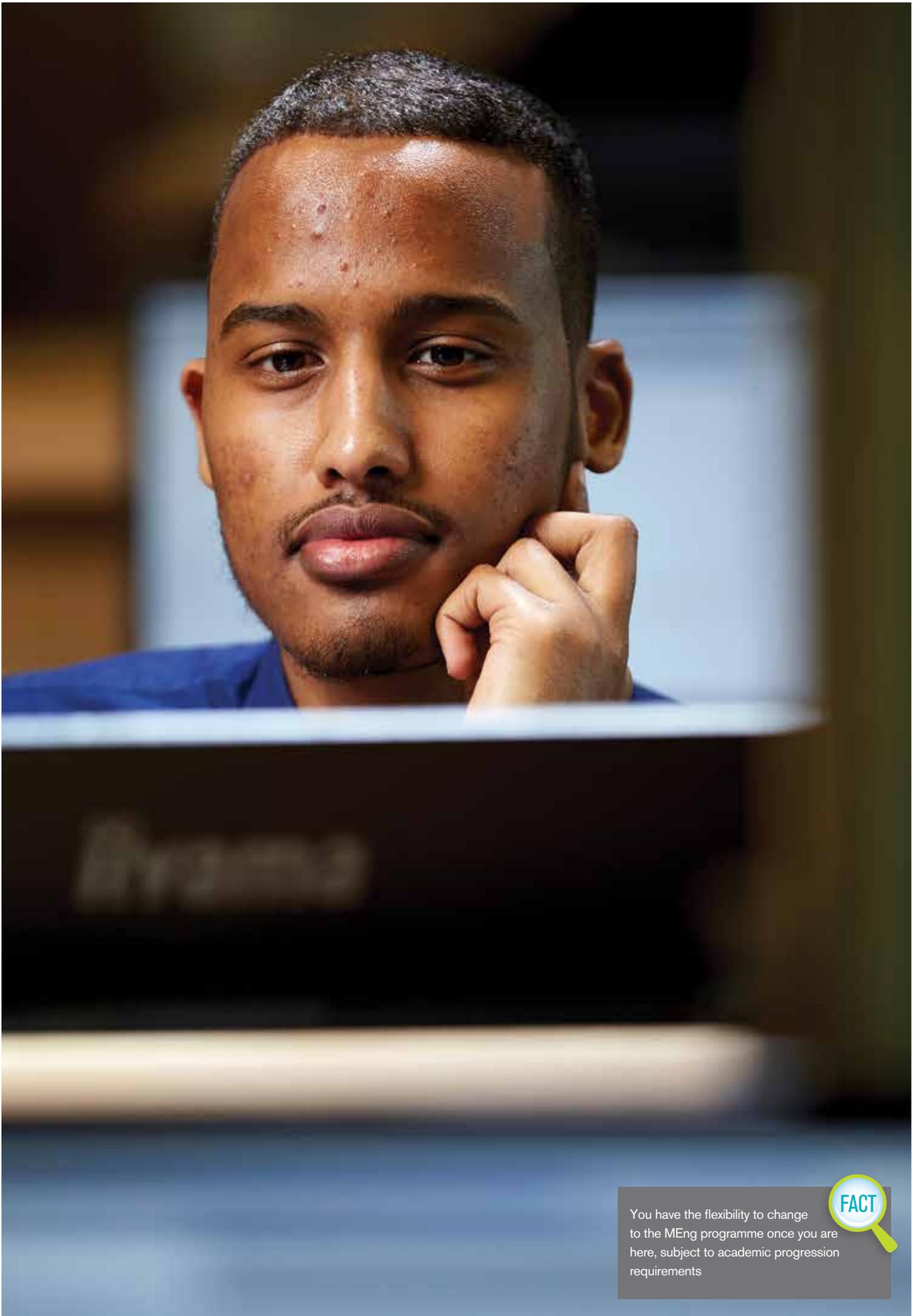
You won't be short of job opportunities when you graduate: there are about 15 companies – including Atkins, Tallis, IBM and Hitachi – actively looking to recruit Birmingham graduates.



## ELECTRICAL POWER SYSTEMS

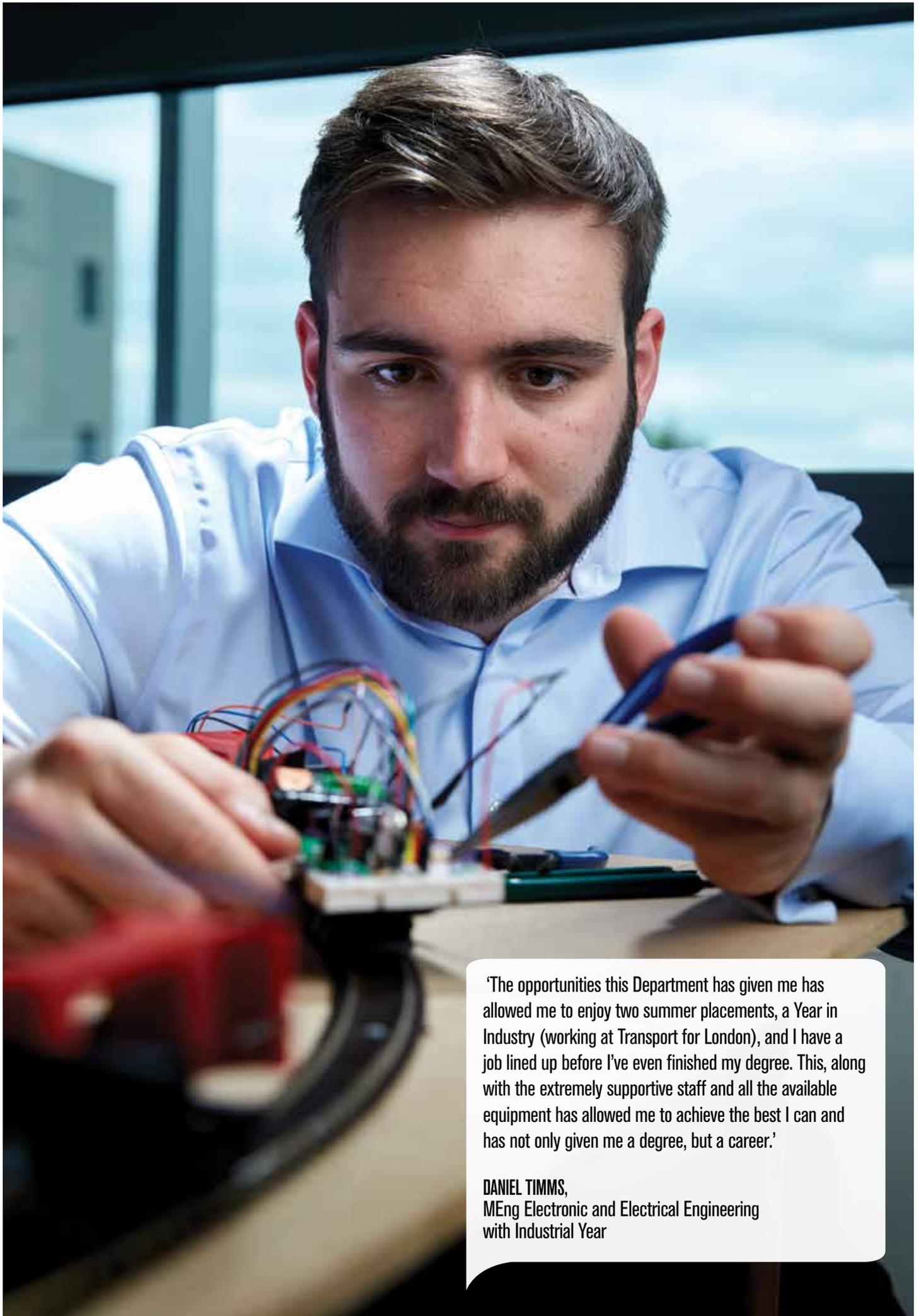
Birmingham and the West Midlands is considered the UK's – as well as Europe's – 'energy valley', where the Third Industrial Revolution is well under way. Our department is at the heart of this, leading advances in electrical power systems that are key to developing a sustainable energy supply, enabling efficient integration of renewable energy generation into smart grids.

Our focus is on fundamental engineering and the economic challenges facing electrical power systems, energy systems and future cities. These include advanced control methods and decision-making tools for infrastructures such as energy, environmental, technological, defence and telecommunications systems; energy system modelling, economics and policy; the operation, control and planning of power grids and smart grids, and cyber security and privacy of infrastructure systems. Globally, there is a big shortage power systems engineers, which means plentiful job opportunities with the likes of Alstom, E.ON and National Grid, with whom we have strong collaborative links.



You have the flexibility to change to the MEng programme once you are here, subject to academic progression requirements





'The opportunities this Department has given me has allowed me to enjoy two summer placements, a Year in Industry (working at Transport for London), and I have a job lined up before I've even finished my degree. This, along with the extremely supportive staff and all the available equipment has allowed me to achieve the best I can and has not only given me a degree, but a career.'

**DANIEL TIMMS,**  
MEng Electronic and Electrical Engineering  
with Industrial Year

# Foundation year

If you want to study Electronic, Electrical and Systems Engineering at Birmingham but don't possess the recommended qualifications for entry to one of our degree programmes, we offer an engineering foundation year programme. This is a multidisciplinary year which gives you the knowledge and skills at the right level, to progress successfully on to an Electronic, Electrical and Systems Engineering degree programme.

## Benefits of the programme

- A broad programme of study providing a solid level of knowledge across science and mathematics.
- Plenty of academic contact and support. Each student is allocated a personal tutor who is able to advise on academic matters.
- Experience of teamwork, building your confidence in technology and numeracy and developing computer literacy and presentation skills.
- Students are taught by the same academic staff who are involved in our accredited degree programmes across the College.
- Possibility to progress to degree programmes across Engineering, Computer Science, Materials Science and Engineering, Mathematics, Nuclear Science and Engineering and Physics and Astronomy.

## Entry requirements

We do not normally accept applications from those who have the correct combination of A levels to apply directly to year one. Other qualifications such as Access to HE, BTEC and IB are considered, please visit our website for a full list of entry requirements.

## How to apply

You will need to submit an application through UCAS to be considered for the programme and indicate the degree you intend to follow after the Foundation Year. You must include this under 'Further details' in the 'choices' section of the application by using the relevant code from the following: For all Electronic and Electrical Engineering programmes: Elec & Elec



## LEARN MORE

**Admissions Tutor:** Kat Grover

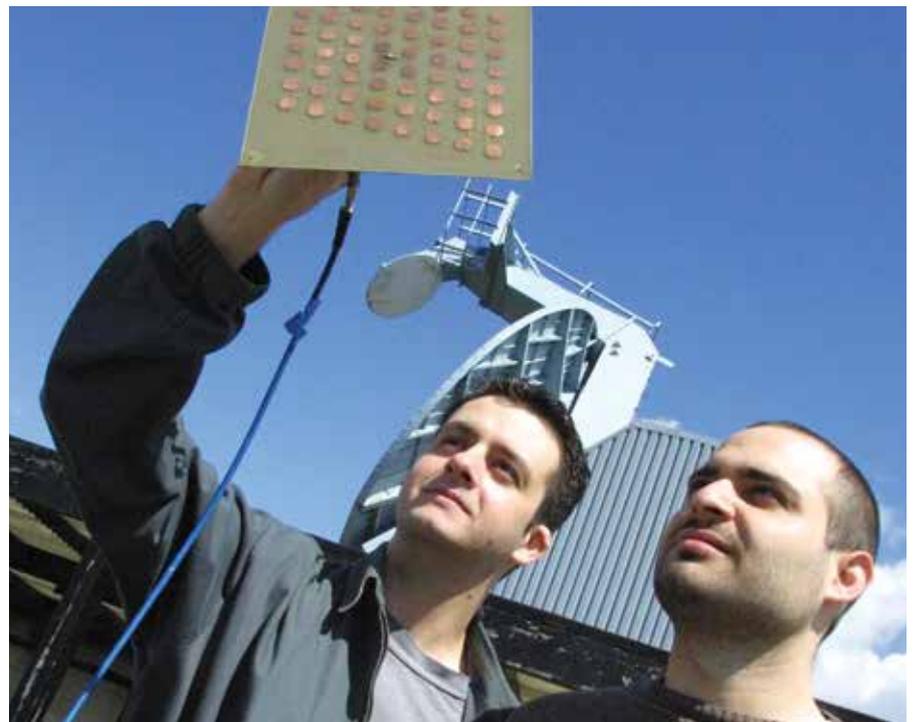
**Tel:** +44 (0)121 414 4563

**Email:** [science-eng-foundation@contacts.bham.ac.uk](mailto:science-eng-foundation@contacts.bham.ac.uk)

**[www.birmingham.ac.uk/engineering-fy](http://www.birmingham.ac.uk/engineering-fy)**

## International students

The dedicated Birmingham International Academy provides support to international students through an Engineering and Physical Sciences pathway. For more information visit [www.birmingham.ac.uk/international/bia](http://www.birmingham.ac.uk/international/bia).



# Electrical and Railway Engineering

Building on the global reputation of the Birmingham Centre for Railway Research and Education (BCRRE), you will obtain a thorough Electrical Engineering education alongside a specific focus on the railway industry. Unique in the UK, this programme ensures that upon graduation you will have the skills and knowledge to benefit from the excellent career prospects in an industry experiencing significant growth.

The railway industry around the world is growing with more journeys than ever before being made, meaning new and improved railway lines, systems and services introduced. In the UK alone passenger numbers are expected to grow by around 50% in the next ten years. New and upgraded lines, new urban services and significant investments in maintenance all mean that electrical engineers who understand railway infrastructure and railway systems are in high demand.

The Birmingham degrees in Electrical and Railway Engineering are the first of their kind in the UK. They have been put together in close collaboration with the railway industry; making them immediately relevant, ensuring graduates

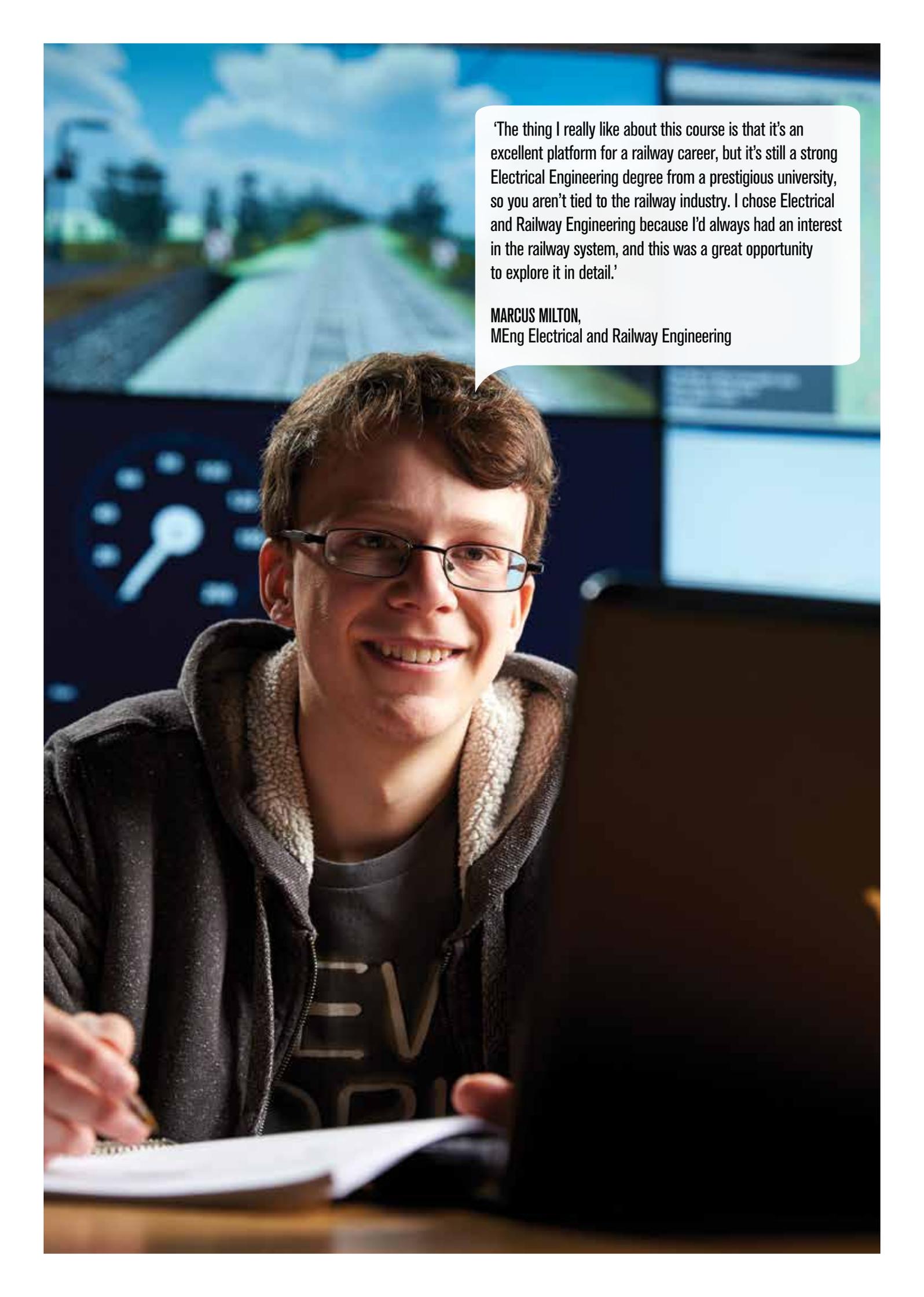
have the knowledge, experience and capability needed to have success careers. Your studies will include core electrical engineering as well as specialised study on railway infrastructure, traction and energy, railway management, timetabling and control, and your design and research projects will all have a railway focus.

You can study to BEng or MEng level and add an industrial placement year to give yourself that all-important work experience. The railway theme will develop your understanding of the complex railway system which means you will be in demand by engineering companies, vehicle and communication systems manufacturers, network operators and non-engineering organisations alike.

## HS2 AND THE UNIVERSITY OF BIRMINGHAM

The headquarters of HS2 construction and of the National College for High Speed Rail are based in the city of Birmingham and the Birmingham Centre for Railway Research and Education (BCRRE) is engaging strongly with these organisations to ensure it plays an integral role in the development of HS2. BCRRE is the largest university-based railway research group in Europe and will be involved in educating the engineers that will work on the HS2 rail link. Relying on our internationally leading expertise, not only do we have a hand in the training and continuing development of the College's teachers, we are also advising on best practice and provide access to a wide range of high-quality educational and testing facilities. BCRRE's work is at the heart of plans to transform railways in the UK and internationally over the coming years, and our multidisciplinary team delivers world-class research and leadership within railways, as well as high-quality teaching to our students.





'The thing I really like about this course is that it's an excellent platform for a railway career, but it's still a strong Electrical Engineering degree from a prestigious university, so you aren't tied to the railway industry. I chose Electrical and Railway Engineering because I'd always had an interest in the railway system, and this was a great opportunity to explore it in detail.'

**MARCUS MILTON,**  
MEng Electrical and Railway Engineering

# Life at Birmingham

Birmingham is a modern and exciting city, famous for its historic, industrial past; it is now a centre of arts and culture, commerce and entertainment with a vibrant and diverse community.

At Birmingham, you will benefit from the best of both worlds; a beautiful green campus, just a few minutes away from the heart of an exciting, busy city. With our very own railway station on campus, trains take just minutes to travel into the city centre.

## RETAIL THERAPY

The city centre offers a first-class retail experience; from famous brands to independent stores, Birmingham has every shop you could ever need.



## FOOD

Digbeth Dining Club is the perfect place for foodies to try all the mouth-watering offerings of Birmingham. Check out Independent Birmingham ([www.independent-birmingham.co.uk](http://www.independent-birmingham.co.uk)) for some Birmingham favourites and hidden gems. Birmingham is home to the famous Balti Triangle, a must-visit place for curry lovers.



## AFTER DARK

As a thriving city for students and young professionals, when the sun sets, Birmingham has a vibrant nightlife and a huge selection of pubs, bars and clubs. As a student-friendly city, there are set student nights for every day of the week in Birmingham; with something for everyone.



## ART AND CULTURE

For the culture vultures out there, Birmingham has something to suit all tastes; whether it be Old Masters, contemporary artists or performing arts. The city regularly hosts a variety of music and cultural festivals including the annual German Market.



## ACTIVE BIRMINGHAM

Stay active during your time at Birmingham by getting involved in the huge variety of opportunities on offer. There are numerous park runs, local teams including hockey, tennis and rugby. Immerse yourself in sport in one of the iconic venues including Edgbaston Cricket Ground and Villa Park stadium.



## MUSIC

Birmingham is full of different beats to suit all tastes, from large arenas and big names in music to smaller more intimate venues, where you can hear everything from new artists to old favourites.



## LOCAL FAVOURITES

There is more to Birmingham than its city centre. You'll find plenty going on just a short walk from our Edgbaston campus. A student favourite, Harborne is home to a number of bars, restaurants and cafes. Nearby Moseley and Kings Heath are buzzing with bars and live music to discover.

## LIFE ON CAMPUS

When you step onto campus, you are immersed in our historic red-brick buildings and glorious green spaces. You'll find our Edgbaston campus both a peaceful and vibrant place to spend your time, whether it's studying on one of the lawns, or enjoying a drink in one of the many cafés.

## SPORTS CENTRE

Our new sports centre opened its doors on 22nd May 2017 and features an exceptional range of quality facilities for everyone from beginner to elite athlete. It will become another iconic sporting venue for the city as the 50-metre pool and arena sports hall will host national and international events.



## NEW FACILITIES

We have recently opened a state-of-the-art library, a new student hub in our Aston Webb Building and a brand new hall of residence – Chamberlain – in the Vale Village. Find out more about some of our most recent developments and projects in the pipeline, including the Collaborative Teaching Laboratory and Green Heart.

[www.birmingham.ac.uk/building](http://www.birmingham.ac.uk/building)

## THE GUILD

The Guild of Students represents all of the students at the University. The Guild offers support and advice to all students, delivers fantastic student nights and entertainment, and has over 150 student groups and clubs for you to choose from.

# How to apply

You have the flexibility to tailor the course you study to your needs and interests, and are not committed to the degree pathway at the point of entry. You have the opportunity to transfer to the MEng programme if you meet the relevant progression requirements at the end of your second year.

## How do I apply?

You will need to submit an application through UCAS to be considered for study and use the appropriate UCAS code from the table. Demand for places is high and we advise applicants to apply early. Please remember to provide full information on your education history when you apply. [www.ucas.com](http://www.ucas.com)

## Essential information

- A level Mathematics is required
- Physics and Further Maths are not required but are advantageous
- General Studies and Critical Thinking are not considered

- International Baccalaureate (IB) Diploma: Our standard offer is no less than 32 points overall including Mathematics at Higher Level (HL). HL scores needed are in the table provided.
- Students who just miss the grade requirements for MEng study will be automatically considered for a place on the BEng programme

We assess all UCAS applications individually to determine your eligibility and so qualifications under other examination systems may also be acceptable.

We assess all UCAS applications individually to determine your eligibility and so qualifications under other examination systems may also be acceptable.


**FACT**

If you're a local student you may be eligible for the A2B Scheme. Visit [www.birmingham.ac.uk/a2b](http://www.birmingham.ac.uk/a2b) for further details.

## Deferred entry and sponsorship

We value the experience gained by students who wish to take an industrial or gap year before entering university. Students who obtain industrial sponsorship may need to defer their entry for the year. If you wish to do this, simply continue with the standard UCAS admissions procedure but write to the Undergraduate Admissions Tutor once you are sure that deferment is required. We will contact UCAS and the University administration on your behalf and make all the necessary arrangements. A place on the following year's course will be reserved for you, so you need take no further action.

Please note the information in this brochure is correct at time of publication but may be subject to change (June 2017).

Programme	UCAS code	Duration (Years)	Typical offer	Subject requirements
Electronic and Electrical Engineering MEng	H605	4	A level: AAA/IB: 6,6,6 with 32 points overall	A level Maths at grade A/HL Maths at grade 6
Electronic and Electrical Engineering BEng	H600	3	A level: AAB/IB: 6,6,5 with 32 points overall	A level Maths at grade B/HL Maths at grade 5
Electronic and Electrical Engineering with Industrial Year MEng	H607	5	A level: AAA/IB: 6,6,6 with 32 points overall	A level Maths at grade A/HL Maths at grade 6
Electronic and Electrical Engineering with Industrial Year BEng	H606	4	A level: AAB/IB: 6,6,5 with 32 points overall	A level Maths at grade B/HL Maths at grade 5
Electrical and Railway Engineering MEng	52H1	4	A level: AAA/IB: 6,6,6 with 32 points overall	A level Maths at grade A/HL Maths at grade 6
Electrical and Railway Engineering BEng	71H9	3	A level: AAB/IB: 6,6,5 with 32 points overall	A level Maths at grade B/HL Maths at grade 5
Engineering Foundation Year	HFJ0	For further details visit <a href="http://www.birmingham.ac.uk/International/foundation-pathways/pathways/engineering-and-physical-sciences-pathway.aspx">www.birmingham.ac.uk/International/foundation-pathways/pathways/engineering-and-physical-sciences-pathway.aspx</a>		

### Fees and funding

For comprehensive information on fees and funding, please visit [www.birmingham.ac.uk/undergraduate/fees/index.aspx](http://www.birmingham.ac.uk/undergraduate/fees/index.aspx)

### Scholarships

The Department offers scholarships to outstanding students to reward excellence in academic performance.

Eligible UK and EU students will be automatically considered for the First Class Scholarship worth up to £5000 on entry. You will need to achieve A\*AA at A level, including A\* in Maths or Further Maths. Alternative qualifications including the International Baccalaureate of 7,6,6 in suitable HL subjects, including 7 in Maths, will also be considered. [www.birmingham.ac.uk/eese-scholarships-uk-eu](http://www.birmingham.ac.uk/eese-scholarships-uk-eu)

If you are an international student whose fees are not wholly paid by a sponsoring body, we will automatically consider you for both the Achievement and the Excellence Scholarship based upon the grades you achieve on entry. We can consider a wide range of qualifications

for the scholarships, and if you perform at first class level during your study with us you may be able to retain the Achievement Scholarship. [www.birmingham.ac.uk/eese-scholarships-international](http://www.birmingham.ac.uk/eese-scholarships-international)

FACT

Further details of University scholarships and funding opportunities can be found on our UG Funding Database at [www.birmingham.ac.uk/undergraduate/funding/index.aspx](http://www.birmingham.ac.uk/undergraduate/funding/index.aspx)

### Visiting us

If you are made an offer you will be given the opportunity to join us on campus at an Applicant Visit Day (AVD). You will be able to visit the Department and its facilities, meet current staff and students, tour our campus and learn more about studying with us. The AVD is an ideal opportunity to ask questions about the programme and student life, and will give you a clear idea of what Birmingham has to offer.



## LEARN MORE

Please contact us for further details or with any questions you may have.

**Admissions Tutor:** Dr Tim Jackson

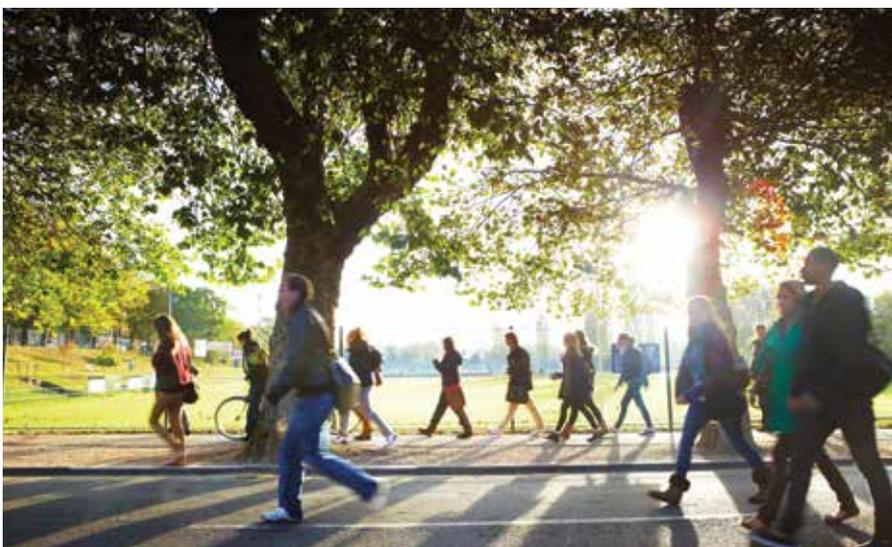
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This leaflet was written several months in advance of the start of the academic year. It is intended to provide prospective students with a general picture of the programmes and courses offered by the School. Please note that not all programmes or all courses are offered every year. Also, because our research is constantly exploring new areas and directions of study some courses may be discontinued and new ones offered in their place.