



THE UNIVERSITY
of EDINBURGH

Postgraduate Opportunities

2021

Engineering



THE UNIVERSITY
of EDINBURGH

Top 50[†]

We're consistently ranked one of the top 50 universities in the world. We're 20th in the 2021 QS World University Rankings.

19TH

We're ranked 19th in the world's most international universities‡. Since 2010, we have taught students from 160 countries.

4TH

We're ranked fourth in the UK for research power, based on the 2014 Research Excellence Framework.†

Top 100

We're ranked in the top 10 in the UK and in the top 100 in the world for the employability of our graduates.§

7TH

Edinburgh is ranked the seventh best student city in Europe and 15th in the world.*

19

There are 19 Nobel Prize winners who are alumni of the University or who have been members of academic staff here.

Online leader

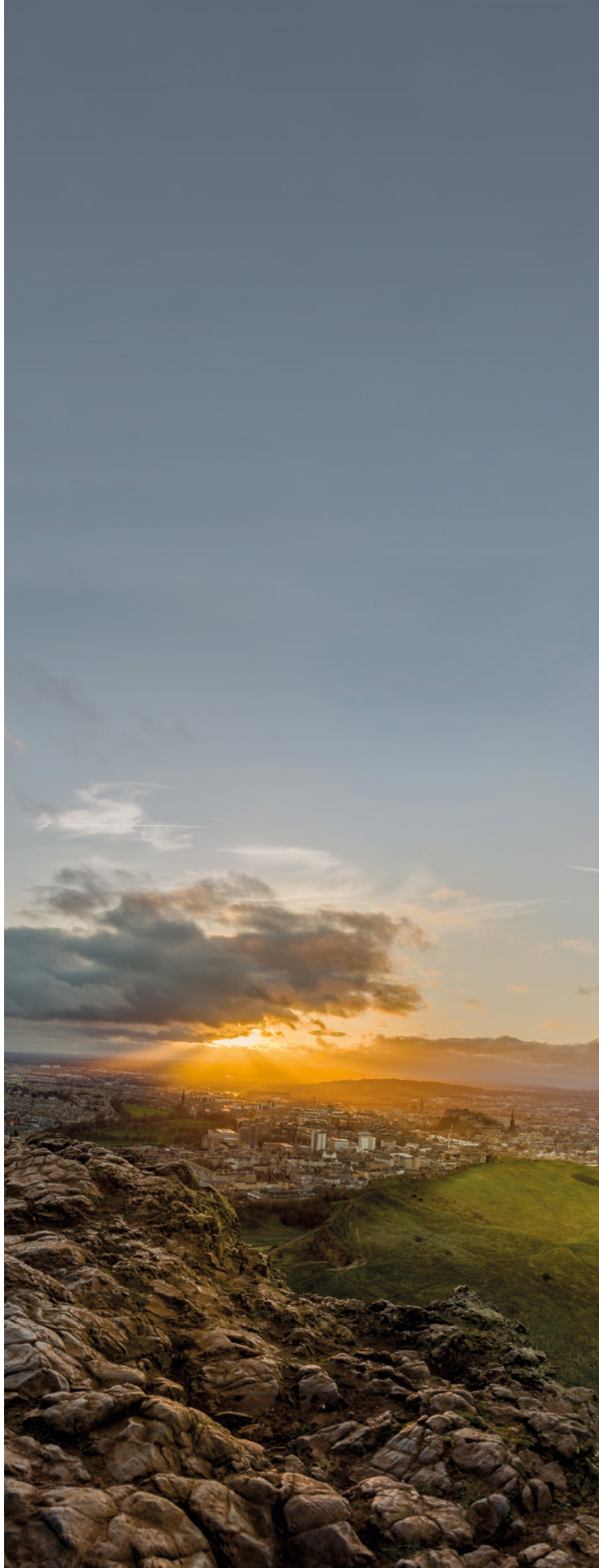
Edinburgh is one of the largest providers of online postgraduate programmes in the UK.

‡ Times Higher Education, The World's Most International Universities 2020

† Times Higher Education, Overall Ranking of Institutions

§ Times Higher Education, Global Employability University Ranking 2019

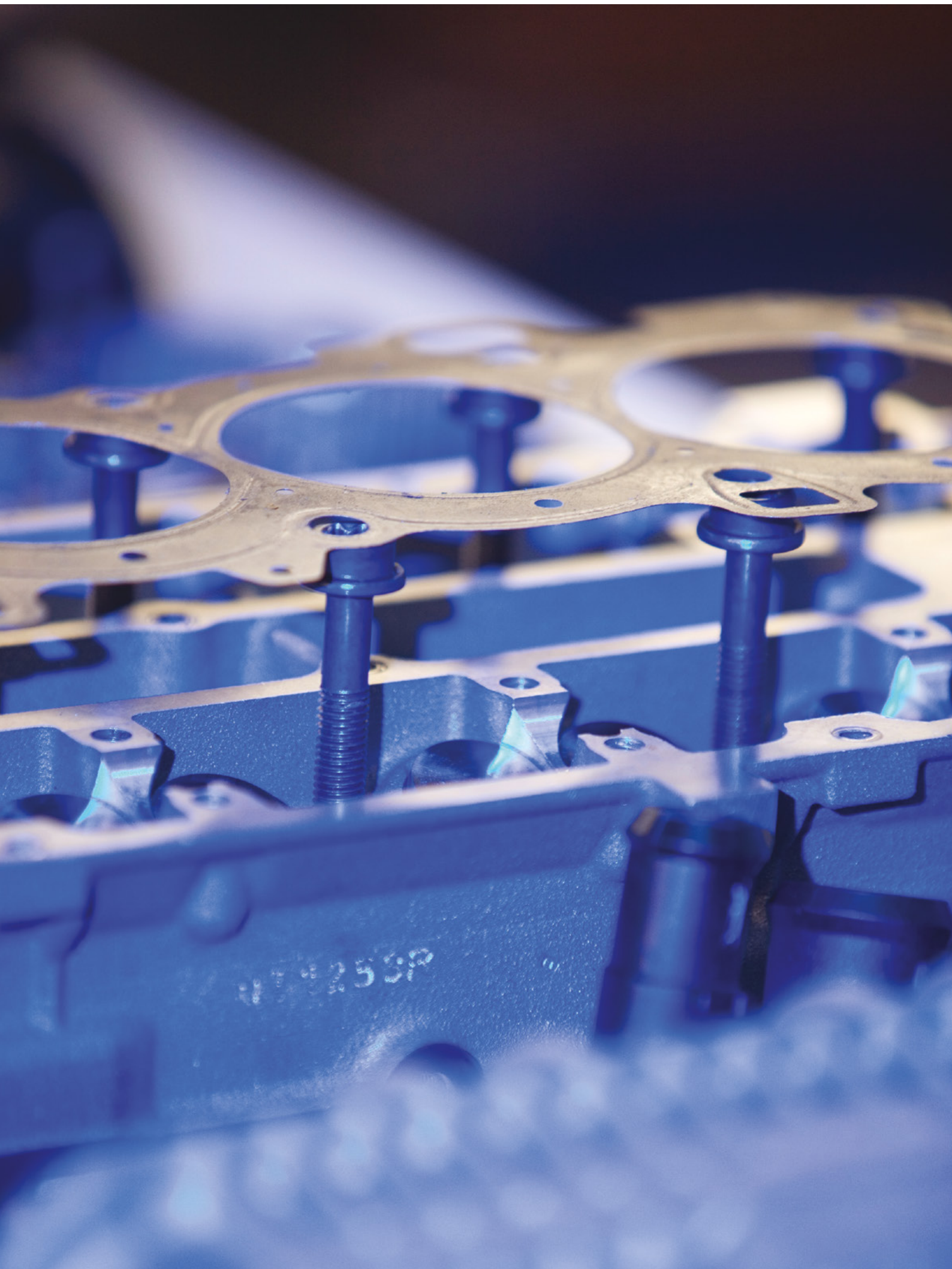
* QS Best Student Cities 2019



Open to the world

We're open to the world today so we can influence the world tomorrow. The University brings people with new ideas and perspectives together in a spirit of interdisciplinary innovation and collaboration. This has already shaped the world in so many ways, from the great thinkers of the Scottish Enlightenment, to the discovery of the Higgs boson particle and the development of a genetically engineered vaccine for Hepatitis B. Our 21 Schools, across three academic Colleges, embody our approach.





About the School of Engineering

Our School is a hotbed of innovation. In the last Research Excellence Framework (REF 2014), 94 per cent of our research activity in general engineering was rated 4* world leading or 3* internationally excellent on the overall quality profile. We have a strong track record of producing technology spin-outs and we develop industry links to help you build relationships that will last your whole career.

We're one of the University's largest Schools, with more than 700 postgraduates, 1,800 undergraduates and more than 150 staff. Our vision is to achieve excellence in all our teaching and research areas, from the science and mathematics that underpin engineering research to its industrial and commercial applications. Our teaching disciplines are accredited by their relevant professional engineering bodies and seven specialist research institutes sit within the School:

Bioengineering

The Institute for Bioengineering has interests in biosensing, tissue engineering, biomedical measurement, modelling and applications. We're developing innovative diagnostic, therapeutic and real-time monitoring biomedical devices and technologies. We demonstrated the first ex vivo and in vivo probing of mechanical characteristics of prostate cancer for monitoring disease progression. The project is in collaboration with clinicians from the Western General Hospital in Edinburgh and funded by the Engineering and Physical Sciences Research Council.

Digital communications

The Institute for Digital Communications (IDCOM) pioneers new technologies in signal processing, imaging, machine learning, and communications for a healthy, safe and connected world. Our research agenda spans from wireless and optical communication networks, tomographic systems and algorithms, remote sensing and inverse problems, biomedical signal processing, analysis and deep learning. IDCOM has a long track record of successful collaboration with industry and government in the areas of healthcare, aerospace, security and defence, as well as academic achievement and scholarly excellence.

Energy systems

The Institute for Energy Systems is shaping the difficult energy decisions of the future. It is continuing a tradition of world-leading innovation from the 1970s 'Duck' wave energy converter, invented by Professor Stephen Salter, to direct-drive electrical generators, wave-generation technology and hydraulic transmission systems. Our research covers machinery, electronics, power distribution, marine energy, including offshore wind generation, climate change impact assessment and policy development.

Infrastructure and environment

The Institute for Infrastructure and Environment develops better technologies to improve the built and natural environments. It hosts the world-leading Building Research Establishment (BRE) Centre for Fire Safety Engineering, and outstanding activities in environmental engineering, bulk materials handling, high-speed rail, non-destructive testing, design, performance, resilience and regulation of structures and systems, as well as digital construction and project management. We also lead the Centre for Future Infrastructure.

Integrated micro and nano systems

The Institute for Integrated Micro and Nano Systems' research encompasses integrated circuit design, system-on-chip design, microfabrication, micro-electro mechanical systems (MEMS), micro-machining and neural computation. Research themes include materials and structures, optical systems and materials, sensors, smart MEMS technology, and smart wireless devices and systems.

Materials and processes

The Institute for Materials and Processes produces world-class research to advance engineering applications of materials, fluids and processes. We use experimental, computational and theoretical methods to shed light on the underlying engineering science. Our research tackles societal challenges, from reducing CO₂ emissions, to sustainable energy, clean water and medical diagnostics and therapeutics. Research themes include carbon capture and separation multiscale modelling, multi-phase flows and transport phenomena, and materials design and characterisation.

Multiscale thermofluids

Research in the Institute for Multiscale Thermofluids spans the range of length and time scales from angstroms to metres, and from femtoseconds to minutes. Our work focuses on uncovering and predicting fluid phenomena theoretically, numerically and experimentally; from interfacial dynamics at the nano scale, to blood flows at the millimetre scale and to fluid jets at the centimetre scale. The fluids are gases, liquids, or even supercritical and they can be inert or chemically reacting. Applications of such research include nano-filtering seawater to make it drinkable, nano heat-exchangers to cool high power computer chips, micro-fluidics for processing and sensing, supercritical jets in high efficiency engines and gas turbines, supercritical processing of alternative fuels, and fundamentals of combustion in down-sized engines for electric vehicles. Research themes include non-continuum and non-equilibrium fluid mechanics; multiphase flows, interfaces and phase change from nano- to macro-scales; and multiphase, interfacial and chemically reacting flows at the macro-scale.

Our community

Our graduate community is large and diverse, composed of 100 academics and more than 700 postgraduate students representing more than 50 nationalities. Our research spans a wide spectrum of modern engineering and we are equipped with state-of-the-art resources, keeping us at the forefront of our research fields.

Unique partnerships

We're a partner in a number of interdisciplinary centres, based both within and beyond the University, from which postgraduate research students can derive additional expertise. These include:

- UK Centre for Carbon Capture and Storage;
- Centre for Biomedical Engineering at Edinburgh;
- Centre for Future Infrastructure;
- Centre for Materials Science and Engineering;
- Centre for Science at Extreme Conditions;
- Scottish Mechanotransduction Consortium;
- Edinburgh Futures Institute;
- Edinburgh Materials Microanalysis Centre.

In addition, postgraduate students can draw on the unique Edinburgh Research Partnership in Engineering and Mathematics (ERPem), a research consortium involving the University of Edinburgh, Heriot-Watt University and Edinburgh Napier University.

More information: www.erp.ac.uk

Pioneering people

From telephone inventor Alexander Graham Bell to geologist James Hutton, the University of Edinburgh has produced many leading lights in the field of science and engineering.

By joining our School you will follow in the footsteps of some of engineering's most pioneering individuals. Our staff, students and alumni have a long tradition of making a vital contribution to contemporary living. Inventor of the cable car Fleeming Jenkin was Professor of Engineering at the University during the 19th century, and William Rankine, a key contributor to the science of thermodynamics, was educated at Edinburgh.

In more recent times, the late Sir James Hamilton – one of our graduates – was responsible for the wing design on aviation icon Concorde. Professor Stephen Salter, who is based at the School as an Emeritus Professor, is widely considered a pioneer in the field of wave energy, while Professor Tharmalingam Ratnarajah and Professor Tughrul Arslan are leading a transformative healthcare project to research and develop the next generation of hearing aid.

Our entrepreneurial engineers have also made significant contributions to modern gadgets, such as the iPod and the camera phone. The Institute for Integrated Micro and Nano Systems (IMNS) holds the world record for producing the smallest colour TV screen – just 3.84 x 2.88mm.



Employability and graduate attributes

With our excellent employability record and international reputation, the University of Edinburgh is a strong choice for developing your engineering career. Whether you are looking to make your mark in industry, consultancy or academia, or develop a business venture of your own, we offer a number of services to help you fulfil your ambitions and make the most of your time here.

In the School of Engineering, we have a strong track record of producing more than 50 technology spin-outs and developing industry links that enable our graduates to build career-long relationships: www.eng.ed.ac.uk/studying/why-edinburgh

Institute for Academic Development

All postgraduate students can benefit from our Institute for Academic Development (IAD), which provides information, events and courses to develop the skills you will need throughout your studies and in the future. IAD events also offer the perfect opportunity to meet and network with other postgraduates from across the University.

Further information is available online: www.ed.ac.uk/iad/postgraduates

For taught postgraduates, the IAD provides a popular study-related and transferable skills support programme. It is designed to help you settle into postgraduate life, succeed during your studies and move confidently to the next stage of your career. It offers on-campus and online workshops and one-to-one study skills consultations, as well as online advice and learning resources in the Study Hub (www.ed.ac.uk/iad/studyhub). The programme and learning resources cover key study skills tailored to different academic stages, including prearrival sessions; getting started with your studies; critical reading, writing and thinking; managing your exams; and planning for and writing up your dissertation.

IAD also provides a comprehensive programme of transferable-skills training, resources and support for researchers completing a doctorate. The programme consists of workshops that are designed to help you successfully prepare for the various milestones of your PhD, from getting started with your research, to writing up and preparing for the viva, as well as developing personal and professional skills that can be transferred to your future employment. Workshops cover topics such as writing skills, reference management tools, statistics, preparing for conferences, delivering

presentations, time and project management, and personal development. IAD also offers online resources and planning tools to help get your research started, as well as support for tutoring and demonstrating, and public engagement and communication.

Careers Service

Our Careers Service plays an essential part in your wider student experience at the University, offering a range of tailored careers and personal development guidance and support. We support you to recognise the wealth of possibilities ahead, while at university and after graduation, helping you explore new avenues, tap into your talents and build your employability with confidence and enthusiasm.

From exploring career options to making decisions, from CV writing to interview practice, from Employ.ed internships to graduate posts and from careers fairs to postgraduate alumni events, we will help you prepare for the future.

We sustain and continually develop links with employers from all industries and employment sectors, from the world's top recruiters to small enterprises based here in Edinburgh. Our employer team provides a programme of opportunities for you to meet employers on campus and virtually, and advertises a wide range of part-time and graduate jobs.

More information: www.ed.ac.uk/careers/postgrad

Platform One

We provide opportunities for students to draw on the knowledge and experience of our worldwide alumni network through lectures, workshops and panel discussions, and online via Platform One. This supportive environment allows students, alumni, staff and volunteers to gather to share their knowledge and experiences and discuss ideas, plans and possibilities.

More information: www.ed.ac.uk/platform-one

Open to new ideas

If you consider yourself something of an entrepreneur, you'll be interested to know that Edinburgh is an entrepreneurial city, home to two of the UK's \$1 billion-valued unicorn companies. We boast one of the most entrepreneurial student bodies in the UK and have helped students launch nearly 100 startups in the last two years. One in five of those startups was a social enterprise. Edinburgh Innovations, the University's commercialisation service, offers free support to student entrepreneurs including one-to-one business advice and a range of workshops, bootcamps, competitions and networking events. Successful recent clients include Orfeas Boteas, creator of the Dehumaniser sound effects software used by Hollywood movies and blockbuster video games; Douglas Martin, whose company MiAlgae aims to revolutionise the global aquaculture and pet food industries; and Aayush Goyal and Karis Gill, whose gift box enterprise Social Stories Club brings ethical products to a wider market: www.ed.ac.uk/edinburgh-innovations/for-students

Research support

We encourage our researchers to gain experience and skills through presenting research via formal outlets such as journals or conferences throughout the duration of your programme. Research students may also have access to courses offered by other organisations such as the Engineering and Physical Sciences Research Council (EPSRC).

Open to the world

The University of Edinburgh has been influencing the world since 1583. Our Schools have a long history of making a difference but it isn't one we take for granted. To this day, we strive to deliver excellence and help address tomorrow's greatest challenges.

Here's a snapshot of what your School's community has been up to recently.

Forbes hypes up enterprising student

Mechanical engineering student Maks Kozarzewski was named as one of Forbes' 25 under 25 in Poland after his impressive work leading the University's HYPED society.

Maks, born in Warsaw, was recognised in the innovation category by the prestigious magazine, which aims to identify rising stars with the potential to positively "influence the development of the Polish economy and society".

HYPED is dedicated to the hyperloop project – a super-fast train concept designed to transport passengers in pods travelling through near-vacuum tubes at speeds comparable to aircraft. The concept was popularised by tech entrepreneur Elon Musk, whose company SpaceX invites the best student hyperloop teams from around the world to test their pod prototypes in the Hyperloop Pod Competition in California each year. HYPED are the only UK-based team to have reached the finals three years in a row.

Maks has been involved with HYPED since he joined the University, working as a chassis engineer and treasurer before becoming president for the 2019/20 academic year.

"Being featured on the list is a great honour and a huge motivational boost. It wouldn't have been possible, however, if not for the amazing work of previous and current HYPED members that have helped make our project the success it is today."

Maks Kozarzewski



Supporting the Covid-19 fightback

A specialist research facility in the School of Engineering helped two technology companies manufacture critical parts for use in intensive care units during the coronavirus pandemic.

The Scottish Microelectronics Centre (SMC) has a strong track record working with commercial and academic clients on a range of cutting-edge engineering manufacturing techniques that take place in the tightly controlled environment of a cleanroom. Specialist staff at the centre used that expertise to support existing clients – Druck and Pyreos – to meet increased demand for specialist sensors to be used on vital healthcare equipment.

Druck used the SMC's cleanroom facilities, staff, specialised silicon wafer grinding and deep etching capabilities to produce sensors for ventilators and Covid-19 testing kits. Edinburgh-based Pyreos, meanwhile, used the facility's cleanrooms and services to produce core gas sensors used in capnography – a process that monitors the concentration or partial pressure of carbon dioxide in a patient's respiratory gases. The company saw a surge in demand from customers in Europe and Asia, with SMC moving quickly to help them accelerate production.

"With the SMC's support, we have helped customers meet the global demand for ventilators and ancillary equipment."

Andrew Wallace
Pyreos CEO

Shielding frontline healthcare workers

The School of Engineering was at the forefront of local efforts to supply key workers fighting the coronavirus pandemic with protective equipment.

In the space of just a few weeks, a team produced and donated nearly 12,000 face shields to health and social care providers including GPs, nursing homes, hospitals, housing services, charities, and a dentist. The initiative involved students, researchers, technicians, academics and support staff from the Schools of Engineering, Geosciences, and Physics, and Design Informatics. Staff from Edinburgh College of Art, Estates and the Library also helped.

Dr Iain Morrison, GP Partner at Newbattle Medical Practice, said: "The face shields received from the University have been vital in protecting staff and securing vital services across Midlothian. For GPs, district nurses and care staff, the face shields offer security and confidence to conduct their duties."

Almost half of the face shields were made to an open-source design using 3D printers. The remainder were made entirely using laser cutting, according to a design developed in-house by the School's technicians, building on other open-source designs available online.

Dr Katherine Dunn, who co-ordinated many of the Covid-19-related activities in the School, said: "We used all the technology and know-how at our disposal to support the fight against Covid-19 in the production of face shields. I am delighted that the team's hard work paid off and our face shields made it to the front line, where they were much appreciated."

Third-year PhD student, Aldwyn Eyres, took part in the project. He said: "It was good to realise that my engineering skills could be useful in helping to fight the pandemic. Producing PPE for health workers has given me a real sense of purpose."



Students race ahead of rivals

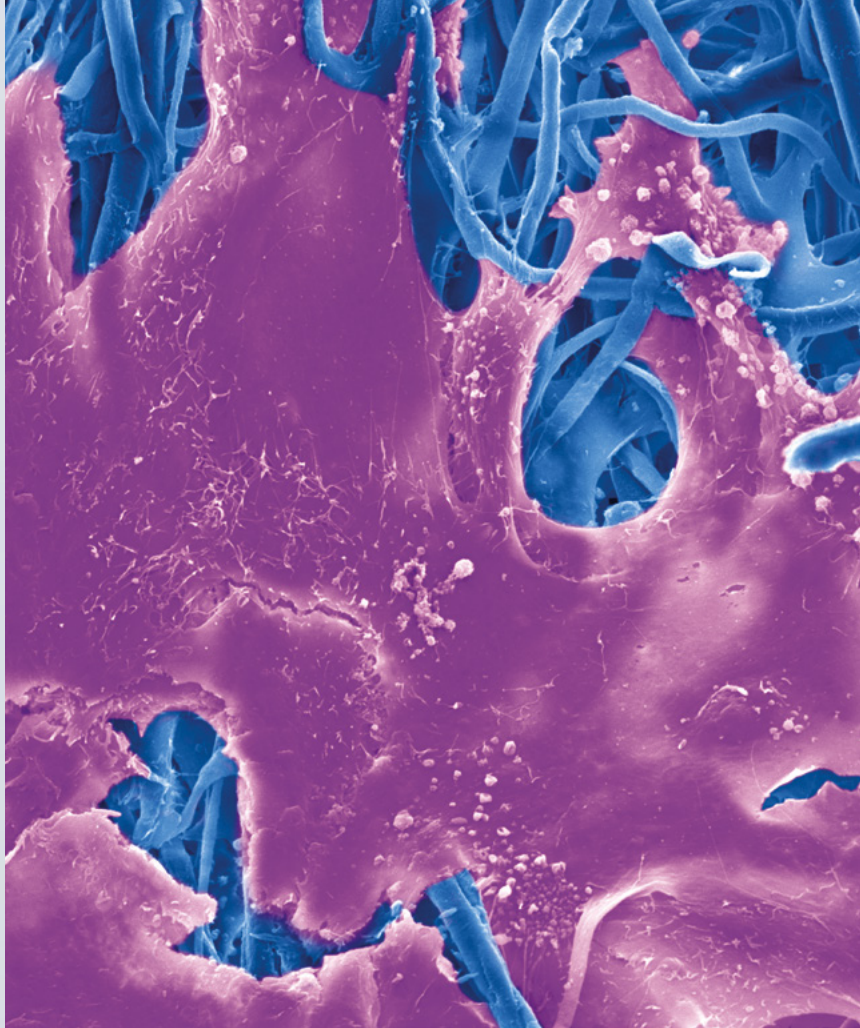
The Formula Student society showcased their talents at the iconic Silverstone racetrack to claim top spot in the Artificial Intelligence (AI) category at the international Formula Student competition.

Organised by the Institute of Mechanical Engineers, Formula Student gives more than 100 university teams from around the world the chance to design and build a Formula One-style race car. They then compete against each other during an action-packed festival of racing.

The competition is viewed by the motorsport industry as the standard for engineering graduates to meet and helps with the transition from university life to the workplace. It offers real-world engineering experience, combining practical engineering with soft skills like business planning and project management. The AI competition challenges teams to develop software capable of controlling a purpose-designed car through a series of racing challenges.

The team outdid their rivals in the 'dynamic' part of the competition, which tested their AI software on the custom-built driverless race car on the track. They also shone in the 'static' elements, which involved delivering presentations on the business and design development of real-world autonomous vehicles.

The Formula Student society was established in 2014 by students of various disciplines. It has more than 50 members, who work across bespoke teams looking after areas like chassis, suspension, electronics, driverless and business.



A synthetic solution to wound healing

A team of researchers has devised an artificial skin which could improve wound recovery for patients suffering from burns or skin grafts.

Engineers from the School created a fabric dressing whose thickness and elasticity can be custom matched to specific areas of the body. The material can be absorbed by the skin's own tissue as it heals. Two synthetic materials are blended to produce nanometre-sized fibres – thousands of times thinner than a strand of hair – which can be fabricated in minutes.

Dr Norbert Radacsi, Antonios Keirouz and Mei Zhang from the School's Institute for Materials and Processes and Dr Anthony Callanan from the Institute of Bioengineering produced the fabric using a recently developed method, known as nozzle-free electrospinning. Electrospinning occurs through the rotation of a cylinder above a pool of solution containing the two components of the fabric. As the cylinder spins under high voltage and temperature, tiny fibres are quickly produced from the liquid and spun onto an adjacent hot surface. As the fibres cool, the fabric is formed.

Research will now focus on further developing and testing the material for medical use, which may take around four years. Dr Radacsi said: "Our technique is a cost-effective way of making artificial skin adapted for all areas of the body, to accelerate the wound healing process."





Alumna among Europe's engineering elite

School alumna Olivia Sweeney (MEng Chemical Engineering 2017) has been named among the Top 100 Most Influential Women in Engineering in the UK and Europe.

Olivia's listing – by Inclusive Boards in association with the *Financial Times* – recognises her work towards creating a more sustainable cosmetics industry through her role as Ethical Buyer for Aroma Chemicals at Lush. She was also recognised for her outreach campaigning to inspire the next generation about the possibilities of careers in engineering.

At Lush, Olivia is responsible for the global supply of around 150 ingredients, ensuring that materials and suppliers meet environmental and ethical standards. She also works on reimagining how cosmetics ingredients can be procured and manufactured more sustainably. This might involve making banana fragrance using banana peel waste, using organic waste as the raw material to generate aroma chemicals, or developing the supply of organic fair-trade ethanol.

A key part of Olivia's role in the business has been changing minds about chemicals. Often, natural ingredients are assumed to be the best and chemicals are inherently bad, but this is not always the case. Olivia also helps raise awareness of the diversity of engineering career options available to young people through her work on the Royal Academy of Engineering's This is Engineering campaign.

"It was a real surprise and a great honour. The list is amazing and inspiring, and to be in that company so early in my career is something I was not expecting. I hope to continue to learn and grow and be deserving of this recognition."

Olivia Sweeney
MEng Chemical Engineering graduate

Our teaching

Most of our taught master of science (MSc) degrees consist of two semesters of taught courses, followed by a research project and a dissertation*.

At the time of printing, our planned taught degrees for 2021 are:

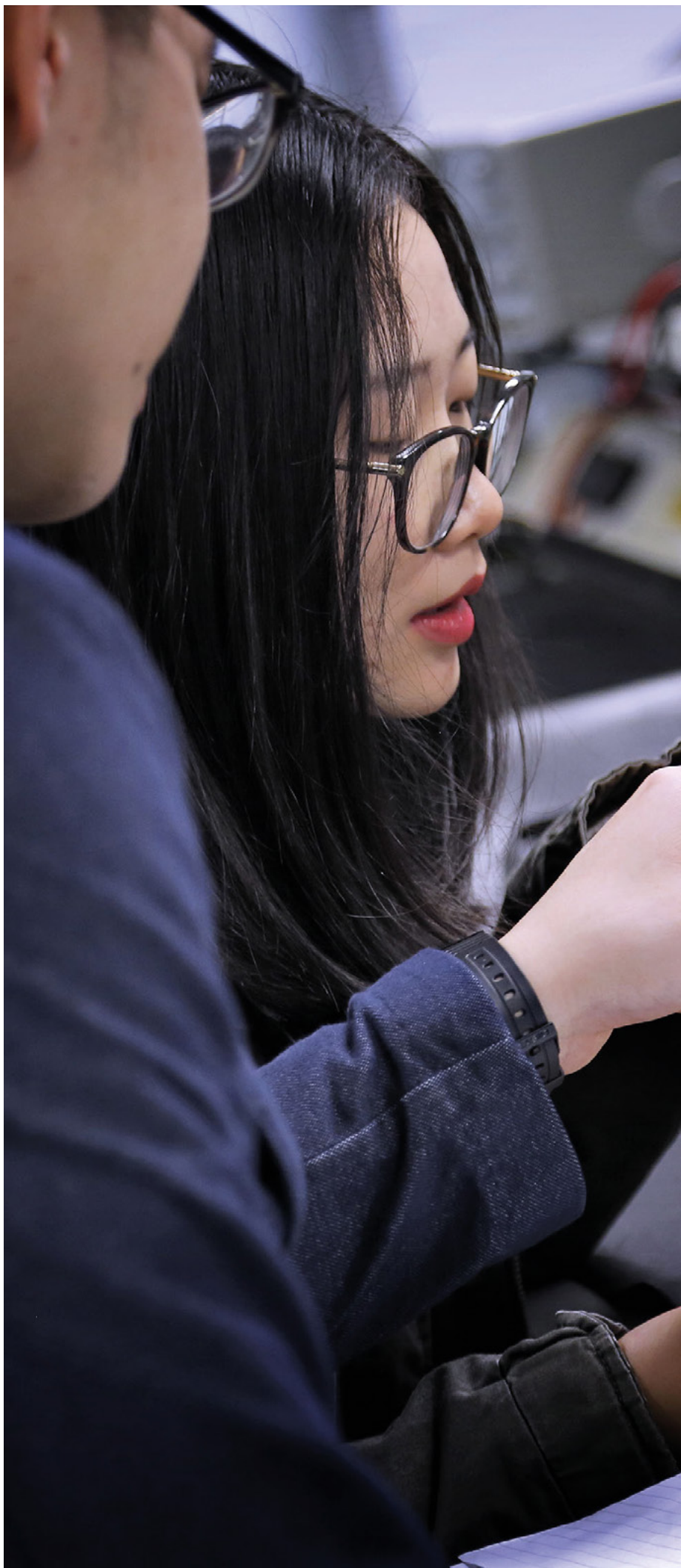
- **Advanced Chemical Engineering** (MSc)
- **Advanced Power Engineering** (MSc)
- **Electrical Power Engineering** (MSc)
- **Electronics** (MSc)
- **International Master of Science in Fire Safety Engineering** (MSc)
- **Leading Major Programmes*** (MSc)
- **Sensor & Imaging Systems** (MSc)
- **Signal Processing & Communications** (MSc)
- **Structural & Fire Safety Engineering** (MSc)
- **Sustainable Energy Systems** (MSc/PgDip)

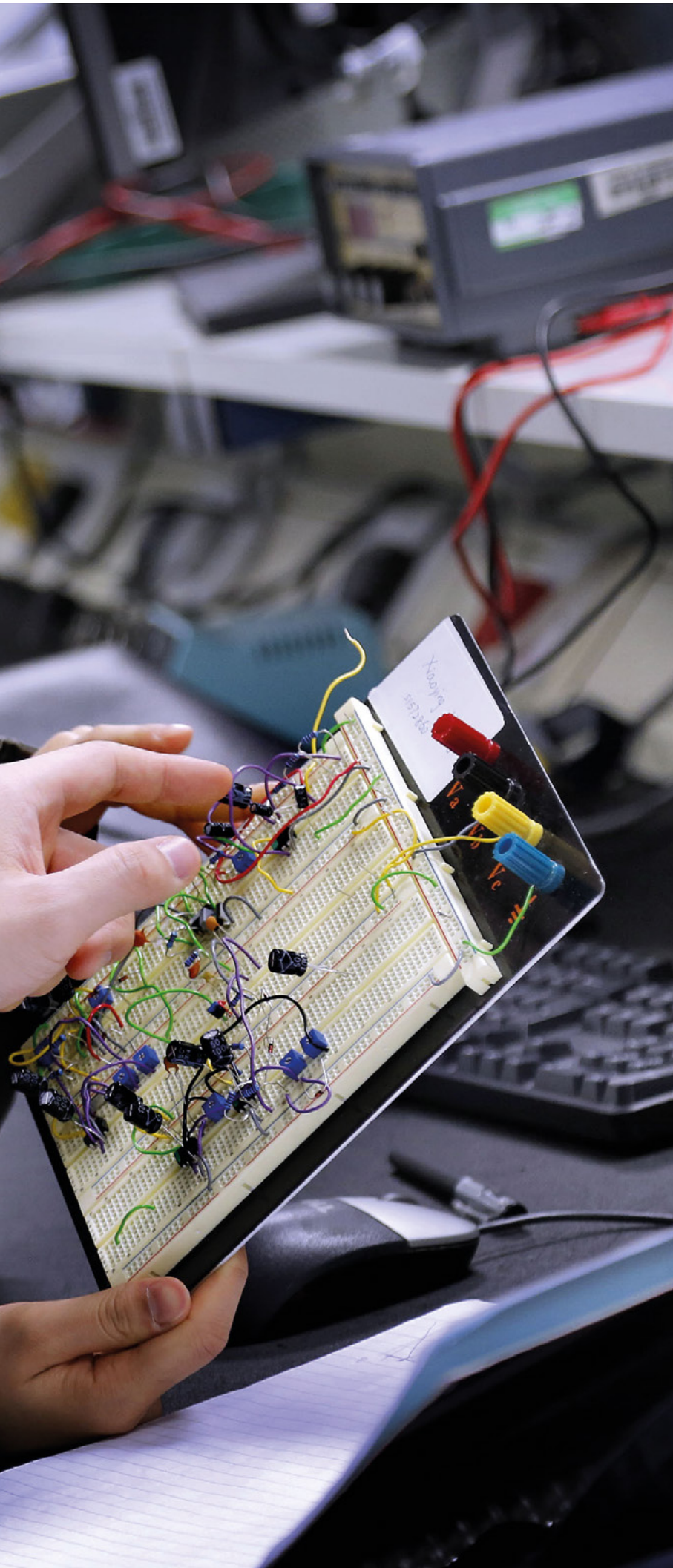
*Leading Major Programmes is taught part-time only.

Please check our online degree finder for the most up-to-date information available on our taught postgraduate opportunities and to make an application: www.ed.ac.uk/postgraduate/degrees

See also...

Some of our taught masters are related to those in other Schools and Colleges. You may be interested in degrees offered by the College of Medicine & Veterinary Medicine, or the Schools of Biological Sciences, Chemistry, GeoSciences, Informatics, Mathematics or Physics & Astronomy. www.ed.ac.uk/studying/prospectus-request





Facilities and resources

From supercomputing to structural testing, the facilities for your postgraduate studies at the School of Engineering are among the best in the world.

Unique resources

We have computing facilities unique to the UK, including the Edinburgh Parallel Computing Centre (EPCC), a leading European centre for research, and the silicon fabrication capabilities of the Scottish Microelectronics Centre (SMC), which also has extensive 'class 10' cleanrooms, and provides rare access to tools for processing 200mm silicon wafers. The SMC has strong links with industry and spin-out activity, generating annual turnover of more than £1 million.

State-of-the-art facilities

The Building Research Establishment (BRE) Centre for Fire Safety Engineering hosts bespoke equipment to support groundbreaking research and consultancy with precisely controlled high temperatures and the latest image analysis techniques. The recently refurbished Structures Test Hall is our high-headroom lab for testing large and unusual assemblies. We have state-of-the-art lab facilities for developing and testing non-destructive evaluations and material-handling technologies. We also have a smart infrastructure lab and a good range of environmental engineering testing resources for the water and waste management sectors. Taught postgraduate students with projects related to machine learning can also access a dedicated server with GPU computing capabilities to train deep learning models.

Further investment

Our £6.5 million Industrial Doctorate Centre in Offshore Renewable Energy is a facility intended to train 50 engineering doctorate students in nine years, in all aspects of offshore renewable energy. The University's leadership in low-carbon energy has been further enhanced by a £9 million investment in the FloWave Ocean Energy Research Facility for wave and tidal devices.

Students of biomechanics have access to the best medical imaging facilities in Europe, the Clinical Research Imaging Centre at the Royal Infirmary of Edinburgh, through a major collaboration between the University and the National Health Service.

In addition to outstanding University-based resources, our degrees use visits to external sites and facilities to gain research data and to contextualise learning.

Research opportunities

We offer a comprehensive range of exciting research opportunities through a choice of postgraduate degrees: PhD, EngD, MPhil and MSc by Research. We also provide a range of services to support you to develop your research project to its full potential.

PhD

As a PhD candidate you pursue a research project under continuous guidance, resulting in a thesis that makes an original contribution to knowledge. In the School of Engineering you will be linked to two academic supervisors. If your project is industrially sponsored, you will also be linked to an industrial supervisor.

Postgraduate research students work within our research institutes (see page 13), in bioengineering, digital communication, energy systems, infrastructure and environment, integrated micro and nano systems, materials and processes, and multiscale thermofluids. These institutes comprise members of staff from four disciplines: chemical engineering; civil and environmental engineering; electronics and electrical engineering; and mechanical engineering.

EngD

This is a four-year professional doctoral-level research and training programme equivalent in standing to a conventional PhD but aimed at students who want a research career in industry. The EngD is industrially focused, and designed to produce specialist graduates who have a sound understanding of the business implications of industrial research activity. You will complete a broad masters-level professional development training programme, then go on to carry out research while working directly with a company.

MSc by Research

An MSc by Research is based on a research project tailored to a candidate's interests. It lasts one year full time or two years part time. The project can be a shorter alternative to an MPhil or PhD, or a precursor to either. It can also be a mechanism for industry to collaborate with the School.

MPhil

The Master of Philosophy (MPhil) resembles a PhD but generally takes two years instead of three and does not carry the same requirement for an original contribution to knowledge. You will pursue your own individual research project under supervision, submitting your thesis at the end of the project.

Research opportunities

At the time of printing, our planned postgraduate research opportunities for 2021 are:

- **Bioengineering** (MScR)
- **Digital Communications** (MScR)
- **Energy Systems** (MScR)
- **Engineering** (PhD/MPhil)
- **Infrastructure & the Environment** (MScR)
- **Integrated Micro & Nano Systems** (MScR)
- **Materials & Processes** (MScR)

Taught professional doctorates

We also offer professional engineering doctorates (EngD), a specialist qualification aimed at professional development:

- **Offshore Renewable Energy** (EngD)
- **Wind & Marine Energy Systems and Structures** (EngD/PhD with Integrated Study)

Please check our online degree finder for the most up-to-date information available on our postgraduate research opportunities and to make an application.

Research degree index:
www.ed.ac.uk/studying/postgraduate/degrees/research

PhD research projects:
www.ed.ac.uk/studying/phd-research-projects

Advice on finding a research supervisor:
www.ed.ac.uk/studying/postgraduate/research

Research support

The development of transferable skills is a vital part of postgraduate training and a vibrant, interdisciplinary training programme is offered to all research students by the University's Institute for Academic Development (IAD). The programme concentrates on the professional development of postgraduates, providing courses directly linked to postgraduate study (for example *Thesis Workshop* and *Paper Production*) and future careers (for example *Career Planning* and *Team Development*).

Courses run by the IAD are free and have been designed to be as flexible as possible so that you can tailor the content and timing to your own requirements.

More information:
www.ed.ac.uk/iad/postgraduates

Showcase your work

Every year, the School of Engineering's Graduate School organises a postgraduate research conference to showcase the research carried out by students across the research institutes. Our researchers are strongly encouraged to present their research at conferences and in journals during the course of their PhD. They are also encouraged and supported to attend transferable skills courses provided by organisations such as the EPSRC.

Business development

The role of our business development team is to help form industry partnerships, including the sponsoring of research, to enable the commercialisation of University intellectual property and successful technology transfer.

Edinburgh Innovations, the University's research and commercialisation office, provides a complete range of services for researchers, inventors, consultants and entrepreneurs in the University's academic community.

More information:
www.edinburgh-innovations.ed.ac.uk

Career prospects

Our research graduates are highly employable. MSc by Research and MPhil graduates progress to industry (to employers such as Brenntag, ConSenSo, and Orbital Marine Power) or go on to doctoral study. Doctoral graduates are split with around half remaining in academia as postdoctoral researchers and/or lecturers in universities and research institutes across the globe, including the University of Edinburgh, Heriot-Watt University, Hong Kong Polytechnic, Imperial College London, University of Oxford, Norwegian Institute of Science & Technology, Sichuan Fire Research Institute and Stanford University.

Graduates entering industry have predominantly worked in engineering consulting, design and manufacture, for employers such as Aecom, Arup, Broadcom, Fujifilm, Huawei, iRobot, Inerco, MottMacDonald, the National Grid, P&G, Rolls-Royce, Vattenfall and Vodafone. A few doctoral graduates take commercial roles in finance, intellectual property and data science.

Research environment

Our world-leading research is conducted through our research institutes:

Institute of Bioengineering (IBioE)

IBioE connects engineering, physical sciences, biology and medicine, for innovative diagnostic and therapeutic biomedical devices and technologies. Research themes include: synthetic biology – engineering biological devices and systems, often at cellular level; tissue engineering – producing 2D and 3D scaffolds or guidance cues for biological cells; biomedical

modelling and measurement – understanding biological materials for applications such as prosthetics, prediction of blood vessel failure and bone ageing behaviour; and biomedical devices and sensors – developing sensors on silicon for simple biological parameters and disease and therapy biomarkers.

Institute for Digital Communications (IDCOM)

IDCOM is the UK's leading internationally recognised research institute in signal processing and communications. Home to the LiFi research and development centre for visible light communications, it has major centres of activity in signal processing, communications systems and tomographic imaging. It pioneers new technologies in signal processing, imaging, machine learning and communications for a healthy, safe and connected world. Our research agenda spans wireless and optical communication networks, tomographic systems and algorithms, remote sensing and inverse problems, biomedical signal processing, analysis and deep learning. The excellent research facilities include agile tomography and audio signal processing labs and state-of-the-art computing systems.

Institute for Energy Systems (IES)

IES helps shape tomorrow's difficult energy decisions in decarbonising society. It continues a long line of world-leading innovation by Edinburgh researchers, including the 1970s 'Duck' wave energy converter, invented by Emeritus Professor of Engineering Design Stephen Salter. Research covers aspects of the low carbon energy chain: resource modelling, impact of climate change, wind, wave, tidal and solar; energy, electrical power conversion, energy storage, carbon capture; biofuels and delivery into the electrical network; and low carbon vehicles.

Institute for Infrastructure & the Environment (IIE)

IIE is among the leading centres of civil and environmental engineering research in the UK, seeking technologies to solve real-world problems and promote sustainability. Key research areas include: behaviour and design of structures in fire and other extreme events; fire science and fire safety engineering; shells and containment structures; nonlinear finite element modelling of complex structures and structural collapses; mechanics and

transport of granular materials and multiphase media; computational mechanics and biomechanics; fibre-reinforced polymer composites in structural strengthening and repair; high-speed rail; infrastructure digital twinning and non-destructive evaluation; sustainable water and wastewater treatment technologies; water supply; waste management and resource recovery; and construction and programme management.

Institute for Integrated Micro & Nano Systems (IMNS)

IMNS brings together researchers from integrated-circuit design, system-on-chip design, image-sensor design, bioelectronics, micro-/nano-fabrication, microelectromechanical systems (MEMS), micromachining, neural computation, and reconfigurable and adaptive computing. Other research interests include low-level analogue, low-power, adaptive and bio-inspired approaches, system-on-chip computing, and applications from telecommunications to finance and astronomy. There is also a research focus on integrating CMOS microelectronic technology with sensors and microsystems/MEMS to create smart sensor systems.

Institute for Materials and Processes (IMP)

IMP brings together researchers from materials science and chemical, mechanical and bioengineering, conducting world-class research into every conceivable kind of material. Work covers the design, synthesis and processing of materials, as well as biomedical and process engineering. IMP has excellent laboratory facilities, one of the UK's largest carbon capture engineering research groups, and particular strength in biomedical and biological engineering.

Institute for Multiscale Thermofluids (IMT)

IMT has world-class experimental facilities and works at the forefront of research in multiphase, interfacial and reacting flows, bridging the time and spatial scales between molecular processes and technological devices. It covers themes of non-continuum and non-equilibrium fluid mechanics; multiphase flows, interfaces, and phase change from nano- to macro-scales; and multiphase, interfacial and chemically reacting flows at the macro scale.



Find out more about research projects:
www.eng.ed.ac.uk/research

Funding

A large number of scholarships, loans and other funding schemes are available for your postgraduate studies. For further information on applications and eligibility, please visit: www.ed.ac.uk/student-funding/postgraduate

Awards are offered by the School of Engineering, the College of Science & Engineering, the University of Edinburgh, the Scottish, UK and international governments and many funding bodies.

Here we list a selection of potential sources of financial support for postgraduate students applying to the School of Engineering. This list was correct at the time of printing but please check the full and up-to-date range online (see above).

University of Edinburgh Alumni Scholarships

We offer a 10 per cent scholarship towards postgraduate fees to all alumni who graduated from the University as an undergraduate, and to all students who spent at least one semester studying at the University on a visiting programme: www.ed.ac.uk/student-funding/alumni-scholarships

Key

- Taught masters degrees
- Masters by Research degrees
- Research degrees

Scholarships at the University of Edinburgh

• China Scholarships Council/University of Edinburgh Scholarships (China) ●

A number of scholarships for PhD study to candidates who are citizens and residents of China. Participating schools to be confirmed: www.ed.ac.uk/student-funding/china-council

• Engineering International Masters Scholarships ●

Scholarships are available to overseas (outside EU) nationals accepted for full-time admission to an eligible taught postgraduate masters programme (advanced chemical engineering, electronics, electrical power engineering, signal processing and communications, structural and fire safety engineering, or sustainable energy systems): www.ed.ac.uk/student-funding/international/engineering

• Kenneth Denbigh Scholarship ●

Scholarships are available to top MSc Advanced Chemical Engineering applicants from any country: www.ed.ac.uk/student-funding/denbigh

• The Mastercard Foundation Scholars Program ●

Up to 50 postgraduate scholarships for on-campus and online masters study with transformative leadership training are available. Applicants should usually reside in and be citizens of a sub-Saharan African country. On-campus scholarships cover full tuition fees, accommodation and maintenance. Applicants should apply to the scholarship directly: www.ed.ac.uk/student-funding/mastercardfdn

• Principal's Career Development PhD Scholarships ●

These prestigious scholarships give access to any applicant from around the world to undertake discipline training and additional skills development. Students are encouraged to engage with entrepreneurial training, teaching, outreach and industrial engagement. Each award covers the tuition fee and full stipend: www.ed.ac.uk/student-funding/development

Research council awards

Research councils offer awards to eligible masters and PhD students in most of the Schools within the University of Edinburgh. All studentship applications from the research councils must be made through the University, through your School or College office. Please check the eligibility criteria for each opportunity online: www.ed.ac.uk/student-funding/research-councils

Loans available for study at the University of Edinburgh

The University of Edinburgh is a participating institution in the following loans programmes, meaning we certify your student status and can help with the application process.

• The Canada Student Loans Program ●●●

The University is eligible to certify Canadian student loan applications: www.ed.ac.uk/student-funding/canadian-loans

• Postgraduate Doctoral Loans England ●

Student Finance England offers postgraduate loans for doctoral study, payable to eligible students and divided equally across each year of the doctoral programme: www.gov.uk/doctoral-loan

• Postgraduate Doctoral Loans Wales ●

Student Finance Wales offers loans for postgraduate doctoral study, payable to eligible students, divided equally across each year of the doctoral programme: www.studentfinancewales.co.uk/postgraduate-students/postgraduate-doctoral-loan

• Postgraduate Loans (PGL) England ●●

Student Finance England offers postgraduate loans for taught and research masters programmes, payable to eligible students: www.gov.uk/postgraduate-loan

• Postgraduate Loans (PGL) Northern Ireland ●●

Student Finance Northern Ireland offers eligible students a tuition fee loan for taught and research programmes, at certificate, diploma, and masters level, which will be paid directly to the University: www.studentfinancenir.co.uk

- **Postgraduate Loans (SAAS)** ●●

The Student Awards Agency Scotland offers eligible students tuition fee loans for taught and research programmes at diploma and masters level, which will be paid directly to the University. Eligible students can also apply for a non-income assessed living cost loan: www.saas.gov.uk

- **Postgraduate Master's Finance Wales** ●●

Student Finance Wales offers eligible students postgraduate finance for taught and research masters programmes: www.studentfinancewales.co.uk

- **US Student Loans** ●●●

The University is eligible to certify loan applications for US loan students. Full details on eligibility and how to apply can be found online: www.ed.ac.uk/student-funding/us-loans

Other sources of funding

The following lists scholarships and support schemes available to students from particular countries who meet specific eligibility criteria.

- **Chevening Scholarships** ●●

A number of partial and full funding scholarships are available to one-year masters students: www.chevening.org

- **Commonwealth Scholarships** ●●●

Scholarships available to students who are resident in any Commonwealth country, other than the UK: www.dfid.gov.uk/cscuk

- **Marshall Scholarships (USA)** ●●●

Scholarships available to outstanding US students wishing to study at any UK university for at least two years: www.marshallscholarship.org



Where we are

The School of Engineering is based at the Sanderson Building on the King's Buildings campus. The campus is around two miles from Edinburgh city centre and is well served by buses and cycling infrastructure.



What's next?

Contact us

For more information about MSc degrees at the School of Engineering contact:

School of Engineering

Sanderson Building
Robert Stevenson Road
The King's Buildings
Edinburgh EH9 3FB
Tel +44 (0)131 650 7352
Email pgtenquiries@eng.ed.ac.uk

Engineering Teaching Organisation

Tel +44 (0)131 650 5687
Email eto@eng.ed.ac.uk

For more information about the application and admissions process for taught MSc degrees, contact:

College of Science & Engineering
Recruitment and Admissions Team
Tel: +44 (0)131 650 5737
www.ed.ac.uk/science-engineering/contact/ug-pgt-enquiries

For more information about applying for our research degrees, contact:

The Graduate School
School of Engineering
Sanderson Building
Robert Stevenson Road
The King's Buildings
Edinburgh EH9 3FB
Tel +44 (0)131 651 7213
Email enggradoffice@ed.ac.uk

To discuss your research proposal, please contact potential supervisors. Details can be found at the Research Institutes' web pages, via www.eng.ed.ac.uk/research

For information about the taught professional doctorate contact:
Industrial Doctoral Centre for
Offshore Renewable Energy
IDCORE office
Sanderson Building
Robert Stevenson Road
The King's Buildings
Edinburgh EH9 3FB
Tel +44 (0)131 651 9023
Email info@idcore.ac.uk

For general enquiries contact:

Director of Learning & Teaching
Professor Tim Stratford
Email tim.stratford@ed.ac.uk

Director of Research
Professor Bernard Mulgrew
Email bernie.mulgrew@ed.ac.uk

Visit us

We offer many opportunities for you to join us in Edinburgh and find out more about the University – including Online Information Sessions to access from the comfort of your own home and Open Days you can attend in person or online. Find out what event we're hosting next: www.ed.ac.uk/visit/open-days

In addition, the School of Engineering runs virtual visits for taught MSc degrees throughout the year, and we invite all applicants to these. Those who have yet to apply should contact the MSc Administrator for more details. Prospective research students wishing to visit should contact the Graduate School.

Virtual Visit

Can't visit Edinburgh in person? Our Virtual Visit allows you to virtually explore the University and the city. View a range of videos, 360° photos and image galleries to find out what it is like to live and study here: www.virtual-visit.ed.ac.uk

Chat online

Wherever you are in the world, we offer you opportunities to get in touch and speak directly to us about studying here.

We offer all postgraduate students online information sessions. To find out more and see when the next session will be: www.ed.ac.uk/postgraduate/online-events

Our visits to you

If you are unable to visit the University, we attend events worldwide whenever possible during the year. Find out about your next opportunity to speak to us in person: www.ed.ac.uk/postgraduate/meet-us



We know these are uncertain times but at the University of Edinburgh your safety is our priority. We hope to welcome you on campus and are committed to ensuring you're taught as safely as possible during the pandemic. To find out about the steps we're taking, in line with Scottish Government guidance, visit: www.ed.ac.uk/news/covid-19

Published by:

Communications and Marketing,
The University of Edinburgh

Designed by:

Parkhouse

Photography by:

Paul Dodds
Shutterstock
Nick Callaghan
Hyped
Getty Images

This publication is available online at www.ed.ac.uk/postgraduate and can be made available in alternative formats on request. Please contact communications.office@ed.ac.uk or call +44 (0)131 650 2252.

We have made every effort to ensure the accuracy of the information in this prospectus before going to print. However please check online for the most up-to-date information: www.ed.ac.uk

The UK formally left the European Union (EU) on 31st January 2020. UK and Scottish Governments have confirmed that most non-UK EU students commencing study in 2021/22 will no longer be treated as 'home' students in relation to fee status or access to funding. Final fee regulations are not yet available but are expected to clarify fee status for those with settled status and for Irish citizens (under the Common Travel Agreement). For the latest information for students and applicants from the EU, please visit our website: www.ed.ac.uk/news/eu

The University's standard terms and conditions will form an essential part of any contract between the University of Edinburgh and any student offered a place here. Our full terms and conditions are available online: www.ed.ac.uk/student-recruitment/terms-conditions

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Education 
SCOTLAND
Innovative. Individual. Inspirational.

Engineering

“Before I even graduated I received a job offer from a major UK power company as a graduate engineer. The year was rewarding and unforgettable – the programme and the prestige of the University really helped me.”

Rula Sha, MSc Electrical Power Engineering

Open to
the world