Postgraduate Opportunities 2020

Engineering

Influencing the world since 1583
“Edinburgh isn’t so much a city, more a way of life … I doubt I’ll ever tire of exploring Edinburgh, on foot or in print.”

Ian Rankin
Best-selling author and alumnus
Influencing the world since 1583

For more than 400 years the University of Edinburgh has been changing the world. Our staff and students have explored space, won Nobel Prizes and revolutionised surgery. They’ve published era-defining books, run the country, made life-saving breakthroughs and laid the foundations to solve the mysteries of the universe.

Our distinguished alumni include NASA astronaut Piers Sellers, former MI5 Director-General Dame Stella Rimington, Olympians Sir Chris Hoy and Dame Katherine Grainger and historical greats such as philosopher David Hume, suffragist Chrysta Macmillan, who founded the Women’s International League for Peace and Freedom, and physicist and mathematician James Clerk Maxwell.

International collaboration
An internationally renowned centre for academic excellence, we forge world-class collaborations with partners such as the California Institute of Technology (Caltech), Stanford University, the University of Melbourne, Peking University, the University of Delhi and the University of KwaZulu-Natal. As a member of the League of European Research Universities and the Coimbra Group, we link up with leading institutions across Europe.

Linking research and commerce
We were one of the first UK universities to develop commercial links with industry, government and the professions. Edinburgh Innovations promotes and commercialises our research excellence and can assist you in taking the first step to market, through collaborative research, licensing technology or consultancy.

Enhancing your career
We are committed to embedding employability in your University experience and have an impressive track record for graduate employment. From volunteering schemes to our sector-leading careers service, we provide you with opportunities to develop your skills, knowledge and experience, giving you an edge in the competitive job market.

TOP 50
We’re consistently ranked one of the top 50 universities in the world. We’re 20th in the 2020 QS World University Rankings.

4TH
We’re ranked fourth in the UK for research power, based on the 2014 Research Excellence Framework.*

83%
The majority of our research – 83 per cent – is considered world leading or internationally excellent.*

TOP 100
We are ranked in the top 10 in the UK and in the top 100 in the world for the employability of our graduates.†

£403m
In 2017/18 we won £403 million in competitive research grants.

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

22ND
We’re ranked 22nd in the world’s most international universities.‡ Since 2010, we have taught students from more than 160 countries.

* Times Higher Education, Overall Ranking of Institutions
† Times Higher Education, Global Employability University Ranking 2018
‡ Times Higher Education: The World’s Most International Universities 2019
Taught masters programmes

Our taught master of science (MSc) programmes consist of two semesters of taught courses, followed by a research project and a dissertation.

Advanced Chemical Engineering

MSc 1 yr FT

Programme description
You will be introduced to current chemical engineering developments through taught modules, workshops, an MSc research dissertation, and supporting activities delivered by key experts in the field. The programme develops fundamental understanding of the systems at a molecular scale and advanced numerical methods, to the actual processes, with an emphasis on energy efficiency. Your dissertation will require you to put your skills into practice, by applying them to actual chemical engineering problems.

Programme structure
Compulsory courses emphasise modern computational techniques, advanced design and research methods, complemented by management and economics. A wide spectrum of option courses allow you to personalise your MSc.

SEMESTER 1 COURSES PREVIOUSLY OFFERED INCLUDE:
Introduction to Research Methods I; Numerical Methods for Chemical Engineering; Molecular Thermodynamics; plus up to two options from: Chemical Reaction Engineering; Fire Science and Fire Dynamics; Engineering Project Management; Computational Fluid Dynamics; Group Design Project (Power Station with Carbon Capture and Storage).

SEMESTER 2 COURSES PREVIOUSLY OFFERED INCLUDE:
Introduction to Research Methods II; plus five or six options from: Polymer Science and Engineering; Nanomaterials in Chemical and Biomedical Engineering; Oil and Gas Systems Engineering; Supply Chain Management; Modern Economic Issues in Industry; Technology and Innovation Management; Gas Separation Using Membranes; Separation Processes; Separation Processes for Carbon Capture; Particle Technology Fundamentals and Industrial Applications; Industrial Ecology; Electrochemical Engineering.

Career opportunities
Edinburgh is a powerhouse for UK engineering. Our graduates enjoy careers in the oil and gas, pharmaceuticals, food and drink, consumer products, banking and consulting industries. Recent graduates have worked for employers such as BP, INEOS, EnecoMobil, Mardel International, Emerson Automation, Repsol, Avery Dennison, Meritco Financial, Billunderskovs, Coop, Dassault Systèmes, Atkins, Kazanorgo neftrans (Kazakhstan), Safran, KVF, Alstom, Gecias, Black &amp; Veatch, Pirelli, General Electric, and Centrica Nuclear. Our graduates are well placed for rewarding, lucrative careers or further study, such as a PhD.

Entry requirements
A UK 2:1 Honours degree, or its international equivalent (www.ed.ac.uk/ international/graduate-entry), in chemical engineering or a closely related field.

English language requirements
See page 24.

Fees and funding
For fees see page 24 and for funding information see page 26.

Programme contact
Postgraduate Taught Office
Tel +44 (0)31 651 3565
Email pgtenquiries@eng.ed.ac.uk

Advanced Power Engineering

MSc 2 yrs FT

Programme description
This programme is designed to train power engineers in the most recent developments in the field. It will help you develop fundamental and applied research skills through a combination of taught courses, workshops and a comprehensive, full year research project supported by our world-leading Institute for Energy Systems. The programme of study has been specially designed for students who are interested in taking up professional posts with demanding research and development duties, or in continuing their studies towards a PhD.

Your learning experience will be augmented by a number of supporting activities delivered throughout the programme. You will develop a deep understanding of advanced power engineering concepts fostered throughout the programme and obtained from the supplementary training activities, study projects and your dissertation.

Programme structure
In Year 1 you will study a selection of fundamental and advanced courses in power engineering. In Year 2 you will engage in a two-semester 120-credit research project carried out either in industry or in collaboration with one of our power engineering research groups.

YEAR 1 COURSES PREVIOUSLY OFFERED INCLUDE:

YEAR 2 COURSES PREVIOUSLY OFFERED INCLUDE:
Research dissertation.

Career opportunities
Power engineering is one of the most in demand professions both in the UK and worldwide. As a graduate, you should find your skills readily suited to careers with government, energy utilities, energy utilities engineering or construction companies, and renewable energy developers. Alternatively you may pursue a career in research and academia through a PhD. We offer networking events, industrial presentations and seminars, and this programme benefits from our strong connections with industry, existing research associations and consortia such as the EPRI/IEC Centre for Energy Systems Integration.

Entry requirements
A UK 2:1 Honours degree, or its international equivalent (www.ed.ac.uk/ international/graduate-entry), in electrical and/or electronic engineering. Other closely related backgrounds may be considered on a case-by-case basis.

English language requirements
See page 24.

Fees and funding
For fees see page 24 and for funding information see page 26.

Programme contact
Postgraduate Taught Office
Tel +44 (0)31 651 3565
Email pgtenquiries@eng.ed.ac.uk

Electrical Power Engineering

MSc 1 yr FT

Programme description
This programme is designed to equip you with a broad and robust training in modern power engineering technologies, with a strong focus on renewable energy conversion and smart grids. Taught courses, workshops and a group design project, led by leading experts in the field, cover key topics in power systems, electrical machines and power electronics.

These include: fundamental and emerging power engineering technologies; advanced numerical methods in application to electrical power engineering problems; modern power conversion components and systems; integration of renewable energy in the power system; distributed energy resources; electrical engineering aspects of energy storage; power, telecommunications and control aspects of smart grids; and research and innovation management techniques.

Programme structure
You will study two semesters of taught courses, followed by a research project leading to the submission of a dissertation applying your acquired skills to real problems in electrical power engineering.

SEMESTER 1 COURSES PREVIOUSLY OFFERED INCLUDE:
Power Engineering Research Techniques; Energy & Environmental Economics; Technologies for Sustainable Energy; Power Systems & Machines; Power Conversion; Advanced Control for Power Engineering.

SEMESTER 2 COURSES PREVIOUSLY OFFERED INCLUDE:
Power Systems Engineering & Economics; Advanced Electrical Machines; Power Electronics for Energy Systems; Electrical Power Engineering Dissertation; Plus options from Distributed Energy Resources and Smart Grids; Principles of Wind Energy; Solar Energy and Photovoltaics; Systems.

Career opportunities
Graduates can be employed in the public or private sector, covering areas from generation to conversion and transmission of electrical power, design and manufacturing of power components and systems as well as energy policy and commerce. The MSc runs in close association with activities within the broader electrical engineering discipline of the School, including networking events and industrial presentations. MSc graduates may also progress to PhD study at Edinburgh or elsewhere. In the 2014 Research Excellence Framework (REF) 94% of our research activity in general engineering was rated 4* world leading or 3* internationally excellent on the overall quality profile. The School has a very strong record in power engineering research and opportunities to progress to a PhD may become available to top graduates.

Entry requirements
A UK 2:1 degree, or its international equivalent (www.ed.ac.uk/ international/graduate-entry), in electrical and/or electronic engineering. Other closely related backgrounds may be considered on a case-by-case basis.

English language requirements
See page 24.

Fees and funding
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Programme contact
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Email pgtenquiries@eng.ed.ac.uk
Taught masters programmes

For fees see page 24 and for funding information see page 26.

Fees and funding

See page 24.

Leading Major Programmes*

Programme description
This programme will equip you with the formative knowledge and skills required by successful leaders of major programmes. It will cover all the basics for programme management and provide fundamental insights into the political and relationship management capabilities that are essential for Chairs, CEDs, COOs, CFOs, client sponsors and supply chain leadership teams to navigate risks in a major programme context.

The programme will best suit mid-career professionals working as clients, programme managers, engineers, delivery agents, contractors, client representatives, project reviewers/auditors. It will be taught by a mix of academics and senior programme managers with hard-won lessons learned to pass on.

You will be taught through classroom and studio-based lectures, tutorials and student-directed learning. Intensive residential periods will be complemented by interactive online teaching. You will also take part in project work, workshops and collaborative problem-solving sessions. Assessment is by written assignments and examinations, project reports and your dissertation.

Programme structure
This programme comprises taught courses run over a two-year period, followed by a research project and dissertation tailored either to the needs of your corporate sponsor or to your individual interests. You will study three courses each semester for the first four semesters then conduct your research project and dissertation, which will be a major research exercise exploring an aspect of the leadership of major programmes, in the last two semesters.

COMPELLARY COURSES PROPOSED INCLUDE:
- Systems Engineering
- Programme Design
- Governance and Managing for Complexity
- Procurement and Programme Delivery
- Strategic Risk Management
- Project Controls
- Data Visualisation and Reporting
- Oversight, Assurance and Managing Stakeholders
- Negotiation, Procurement and Engineering
- Data Science and Digital Strategy
- Creativity, Resilience, Research Methods and Project Proposal
- Dissertation

Career opportunities
Graduates will be equipped with an evidence-based strategic overview of proven techniques on how to organise and manage for success and how to nurture and develop the personal and collective qualities required to lead such programmes. This will be beneficial to existing and aspiring major programme leaders in any field where complex, large-scale change need to be managed, such as infrastructure, defence, information technology, healthcare, big science or large scale infrastructural enterprises.

Entry requirements
A 2.1 honours degree, or its international equivalent (www.ed.ac.uk/international/graduate-entry), in engineering or a degree in another discipline with elements of project and programme management. We will also consider your application if you have an honours degree in another discipline and can demonstrate adequate motivation and interest in the programme. All applicants must have a minimum of five years' project management experience at middle or senior management level. We may also consider your application if you have other qualifications or experience; please contact us to check before you apply.

English language requirements
See page 24.

Fees and funding
For fees see page 24 and for funding information see page 26.

*Subject to approval
Sensor & Imaging Systems

MSc 1 yr FT

Programme description
This programme is run jointly by the University of Edinburgh and the University of Glasgow. It focuses on the principles, methods, techniques and technologies involved in a wide range of needs in applications spanning research, industry and medicine. Sensing and sensor systems are essential for advances in research across all fields of physics, engineering and chemistry and can be enhanced when multiple sensing functions and capabilities are integrated into array-based imaging.

Industrial applications of sensor systems are ubiquitous – from mass-produced sensors found in modern smartphones and cars to the state-of-the-art, specialist high-value sensors routinely used in oil and gas recovery, scientific equipment, medical tools, medical equipment and environmental monitoring.

Programme structure
This programme is run over 12 months. The first semester of taught courses is run at the University of Glasgow, followed by a research project, carried out at either University of Edinburgh or another university, leading to a masters thesis.

SEMESTER 1 COURSES PREVIOUSLY OFFERED INCLUDE:
- University of Glasgow: Fundamentals of Sensing and Imaging; Imaging and Detections; Detection and Analysis of Ionising Radiation; Circuits & Systems; Option course in physics or engineering.
- University of Edinburgh, two compulsory courses: Applications of Sensor and Imaging Systems; Research Project Preparation. Two to four option courses in engineering and/or chemistry, e.g., Biophysical Chemistry; Physical Techniques in Action; Biometrics and Instrumentation; Lab-on-Chip Technologies; Microfabrication Techniques; Electronic Product Design and Manufacture; Technology & Innovation Management.

Career opportunities
Sensor and imaging technologies underpin a vast range of societal, research and industrial needs. This is an industry-focused programme designed for students looking to develop the skills and knowledge that will open up opportunities in the many companies developing sensor- and image-based solutions.

Entry requirements
A UK 2:1 honours degree, or its international equivalent (www.ed.ac.uk/ international/graduate-entry), in engineering, physics, chemistry or another relevant physical science. Entry is competitive so we would prefer a UK first class honours degree, or a UK 2:1 honours degree supported by an MSc degree, or their international equivalents. We may also consider your application if you have a background in a related field, such as computer science, physics or mathematics. Entry into this high level programme is competitive so we expect high grades in fundamentals, such as mathematics, signals and systems, probability and statistics, and communications and signal processing.

English language requirements
See page 24.

Fees and funding
For fees see page 24 and for funding information see page 26.

Programme contact
Postgraduate Admissions Team
Tel +44 (0)141 330 4515
Email pgadmissions@glasgow.ac.uk

Signal Processing & Communications

MSc 1 yr FT (2 yrs PT available for UK/EU students)

Programme description
This programme provides graduates and working professionals with a broad training in signal processing and communications, including machine learning and other technologies. It is suitable for recent graduates who wish to develop the specialist knowledge and skills relevant to these industries and is also suitable as advanced study in preparation for research work in an academic or industrial environment or in a specialist consultancy organisation. Engineers or other professionals wishing to participate in the MSc programme may do so on a part-time basis.

Our students gain a thorough understanding of theoretical foundations as well as advanced topics at the cutting edge of research in signal processing and communications, including compressive sensing, deep neural networks, wireless communication theory, and numerical Bayesian methods. Your MSc project will provide a good opportunity to work on state-of-the-art research problems in signal processing, communications, and machine learning.

Programme structure
This programme is run over 12 months, with two semesters of taught courses leading to a masters thesis.

SEMESTER 1 COURSES PREVIOUSLY OFFERED INCLUDE:
- Discrete Time Signal Analysis; Digital Communication Fundamentals; Probability; Estimation Theory and Random Signals (PETARS); Image Processing; Digital Signal Processing Laboratory.

Career opportunities
With our excellent employability record and our international reputation, the University of Edinburgh is a key player in developing your engineering career. This programme will prepare you to pursue a career in industries such as communications, radar, medical imaging, data science and machine learning, or anywhere else signal processing is applied.

Entry requirements
A UK 2:1 honours degree, or its international equivalent (www.ed.ac.uk/ international/graduate-entry), in engineering, physics, chemistry or another relevant physical science. Entry is competitive so we would prefer a UK first class honours degree, or a UK 2:1 honours degree supported by an MSc degree, or their international equivalents. We may also consider your application if you have a background in a related field, such as computer science, physics or mathematics. Entry into this high level programme is competitive so we expect high grades in fundamentals, such as mathematics, signals and systems, probability and statistics, and communications and signal processing.

English language requirements
See page 24.

Fees and funding
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Programme contact
Postgraduate Taught Office
Tel +44 (0)131 651 3565
Email pgtenquiries@ed.ac.uk

Structural & Fire Safety Engineering

MSc 1 yr FT

Programme description
Innovative design allows more interesting and functional architecture but challenges traditional concepts of fire safety. To respond to these demands takes specialist knowledge and advanced skills in engineering analysis. This programme covers the fundamentals of fire science, including laboratory classes, fire safety engineering and relevant structural engineering topics, such as finite element methods. You will gain knowledge of the critical issues in structural fire safety engineering, and an understanding of relevant fire and structural behaviour in fire, familiar with performance-based approaches to design and have an awareness of the capabilities – and limitations – of relevant advanced modelling methods for structures and fire. Our Building Research Establishments (BRE) and Chalmers University of Technology are leading hosts bespoke equipment to support groundbreaking research and teaching, with combined thermal and mechanical loading and use of the latest image analysis techniques.

This programme is fully accredited by the Joint Board of Moderators: www.jbm.org.uk

Programme structure
You study two semesters of taught courses, a research project and thesis.

SEMESTER 1 COURSES PREVIOUSLY OFFERED INCLUDE:
- Fire Science and Fire Dynamics; Structural Design for Fire; Steel Structures; Finite Element Analysis for Solids; Fire Investigation and Failure Analysis; Fire Safety, Engineering and Society; State-of-the-Art Review in Fire Safety Engineering.

SEMESTER 2 COURSES PREVIOUSLY OFFERED INCLUDE:
- Fire Science Laboratory; Models for Fire Safety; The Finite Element Method; Earthquakes and Earthquake Engineering; Fire Prevention Project; Fire Safety Engineering: Dissertation.

Career opportunities
Internationally, there is great demand for graduates in this field, with expertise in structural fire safety engineering particularly sought after as performance-based design expands. Most of our previous graduates are in relevant employment, with the majority working in fire teams at engineering consultancies, while others are pursuing further study.

Entry requirements
A UK 2:1 honours degree, or its international equivalent (www.ed.ac.uk/ international/graduate-entry), in civil engineering or a related subject. We may also consider your application if you have a background in another field, such as computer science, physics or mathematics. Entry into this high level programme is competitive so we expect high grades in fundamentals, such as mathematics, signals and systems, probability and statistics, and communications and signal processing.

English language requirements
See page 24.

Fees and funding
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Programme contact
Postgraduate Taught Office
Tel +44 (0)131 651 3565
Email pgtenquiries@eng.ed.ac.uk

Sustainable Energy Systems

MSc 1 yr FT

Programme description
This programme is specifically aimed at MSc and postgraduate diploma (PgDip) students. It is aimed at students with a background in a relevant field, such as mathematics, signals and systems, probability and statistics, computer science, physics or mathematics. Entry into this high level programme is competitive so we expect high grades in fundamentals, such as mathematics, signals and systems, probability and statistics, and communications and signal processing.

Programme structure
This programme is run over 12 months, with two semesters of taught courses followed by a research project leading to a masters thesis.

COMPULSORY COURSES PREVIOUSLY OFFERED INCLUDE:

Semester 1: Technologies for Sustainable Energy, Energy and Environmental Economics; Sustainable Energy Contexts.


OPTION COURSES PREVIOUSLY OFFERED INCLUDE:
- Depending on quotas and timetabling, we can offer further courses from the Schools of Engineering, Geosciences, and Social & Political Science, from Edinburgh School of Architecture & Landscape Architecture (ESALA), and from the Business School.

Career opportunities
Graduates work on a range of activities in industry, public organisations or academia. The MSc has well-established links with industry, with many graduates finding employment with leading national and international organisations involved in renewable energy consultancy and engineering. Recent graduates are now working as civil, structural, automotive, subsea and electrical engineers and as power systems, energy and environment and renewable energy consultants. Employing firms for our graduates have included Avedon Dennison, GE, Schneider, SSE, Scottish Power and many others.

Entry requirements
A UK 2:1 honours degree, or its international equivalent (www.ed.ac.uk/ international/graduate-entry), in engineering, physics or mathematics. Entry into this high level programme is competitive so we expect high grades in fundamentals, such as mathematics, signals and systems, probability and statistics, and communications and signal processing.

English language requirements
See page 24.

Fees and funding
For fees see page 24 and for funding information see page 26.

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Email pgtenquiries@eng.ed.ac.uk

www.eng.ed.ac.uk
Research at the School of Engineering

We offer a comprehensive range of exciting research opportunities through a choice of postgraduate programmes: 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 an industrial supervisor. If your project is industrially sponsored, you will also be linked to an industrial supervisor.

Postgraduate research students work within our research institutes (see pages 12 and 14), in bioengineering, digital communication, energy systems, infrastructure and environment, integrated micro & 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 doctoral-level research and training programme equivalent to a PhD but generally takes two years instead of industrial research activity. Professional doctorates are specialist qualifications aimed at professional development.

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 programme directly linked 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 pursue your individual research project under supervision, submitting your thesis at the end of the project.

Entry requirements
A UK 2:1 honours degree, or its international equivalent (www.ed.ac.uk/ international/graduate-entry), in an appropriate subject, or relevant qualifications and experience. Please contact us to check the specific entry requirements for your programme before you apply.

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.

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

Career prospects
Our research graduates are highly employable. MSc by Research and MPhil graduates progress to industry (e.g. to employers such as Brentnag, 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.

Those graduates entering industry predominantly work in engineering consulting, design and manufacture, for employers such as Aecom, Arup, Broadcom, Fujifilm, Huawei, IBM, Mott MacDonald, the National Grid, P&G, Rolls-Royce, Vattenfall and Vodafone. A few doctoral graduates take commercial roles in finance, intellectual property and data science.

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

We cover the entire field of engineering through our specialist research institutes.

Case study: Edinburgh’s research with impact
Informing the safety of iconic constructions

True fire resistance, along with an understanding of just how fires grow and spread, is key to preventing tragedies. The University’s BRE Centre for Fire Safety Engineering focuses on the two main areas of building fire safety – detection, containment and suppression of fires, and performance-based design. Over 40 years, the Centre and its committed group of researchers have transformed the way the world regards structural design for fire.

Project background
Engineering consultancy giant Arup faces the challenge of fire safety in every building project it takes on. For advice and expertise in this area, the company calls on the BRE Centre, which leads the way in innovative research and building methodologies. Drawing on the tradition of world-leading academic and practical expertise established by its distinguished founders and teaching staff, the Centre entered into collaboration with Arup on the design of London’s Heron Tower to provide the designers with the tools they needed to analyse fire initiation, growth and spread, and create a structural response appropriate to a large, multi-storey building with open-plan compartments and a central atrium.

Project results
Without the information provided by the Edinburgh researchers, Heron Tower could not have been approved or built. The Centre’s expertise is also sought by international building and fire code committees including the American Concrete Institute, the British Standards Institute, and the International Council on Tall Buildings and Urban Habitat. The BRE Centre has created an entirely new type of design consultancy in performance-based structural fire engineering, which is being applied to great advantage by major international engineering firms in UK buildings and further afield.

The Centre and its committed group of researchers have transformed the way the world regards structural design for fire.
Research opportunities

www.ed.ac.uk/pg/947

Engineering

Programme aims
This programme will train you as a researcher, allowing you to develop advanced techniques and in-depth knowledge in a specialist area of engineering along with a broad range of transferable skills. You will carry out independent research, resulting in an original contribution to knowledge in your chosen area, working under the guidance of your supervisors in one of our research institutes. To be awarded a PhD, you will submit a thesis and defend it in an assessed oral exam.

Programme structure
You will be required to discuss, and regularly review, your training needs with your supervisor and attend a balanced selection of training courses and personal development, including: compulsory inductions; final year undergraduate or postgraduate courses (if appropriate); transferable and personal development, including: compulsory inductions; final year mandatory training), participating in relevant committees, attending research seminars, and contributing to academic life, for example through the graduate society, or at open days and outreach activities.

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

Institute of Bioengineering (IBioE)
IBioE connects engineering, physical sciences, biology and medicine, enabling cross-fertilisation of ideas and technologies. Research themes include:
• Biomedical devices and sensors – working with colleagues in biomolecular sciences to develop new methods for innovative diagnostic and therapeutic biomedical devices and systems, often at cellular level. Applications range from therapeutic to environmental.
• Tissue engineering – the production of 3D or 2D scaffolds or guidance cues for biological cells. Applications are largely therapeutic and also include new forms of lab-on-chip technology.
• Biomedical modelling and measurement – understanding biological materials through modelling and measurement for applications in, for example, prosthetics, prediction of failure in blood vessels and the behaviour of bone with ageing. We also study the behaviour of biological materials experimentally and, in most cases, non-invasively (e.g. via Raman spectroscopy and CARS microscopy).
• Biomedical devices and sensors – working with colleagues in chemistry, we develop sensors on silicon for simple biological parameters (e.g. oxygen concentration) along with sensors of specific biomarkers of disease and therapy.

Institute for Digital Communications (IDCOM)
IDCOM is the UK’s leading research institute in signal processing and communications and is home to the LiF research and development centre. We have three major centres of activity: signal processing, communications systems and tomographic imaging. Our programme delivers world-leading research in signal and image processing and communications from fundamental theoretical and algorithmic work through to its translation to specific audio, imaging, radar/sonar, and communications applications. The institute has excellent research facilities, including state-of-the-art computing systems and laboratories for agile tomography and audio signal processing, as well as the LiF research and development centre for visible light communications. Internationally recognised for our research on communications systems and signal processing, we offer research topics including: green radio; visible light communications; cognitive radio; compressive sensing; distributed sensor signal processing; and agile tomography. IDCOM holds the only UK Research Council platform award in sensor signal processing, in collaboration with the joint research institute in signal and image processing at Heriot-Watt University, recognising our world-leading research status.

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 Stephen Salter – now Emeritus Professor of Engineering Design. Our research covers all 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 – developing more efficient internal combustion engines.

Institute for Infrastructure & the Environment (IIE)
IIE is among the leading centres of civil and environmental engineering research in the UK. The institute seeks new technologies to solve real-world problems in order to 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 bio-mechanics; fibre reinforced polymer composites in structural strengthening and repair; high-speed rail; intelligent infrastructure and non-destructive evaluation; sustainable water and wastewater treatment technologies; water supply; and waste management and resource recovery. IIE has excellent laboratory and computing capabilities, including the latest facilities and instrumentation for experimental and computational research in structures, granular solids, fire safety engineering, non-destructive testing and environmental engineering.
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, micro/nano-machining, 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. We have a strong and growing interest in applications relating to the life sciences and medicine, particularly on bioelectronics, biophotonics and bio-MEMS. IMNS has laboratory facilities that are unique within the UK, including an advanced silicon and MEMS micro-fabrication capability coupled with substantial design and test resources. The institute has an excellent reputation for commercialising technology.

Institute for Materials and Processes (IMP)
IMP brings together researchers from materials science and chemical, mechanical and bio-engineering, 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 one of the UK’s largest carbon capture engineering research groups, and particular strength in biomedical and biological engineering. The institute has excellent laboratory facilities, including the latest instruments for research in adsorption, biomedical engineering, conservation materials science, high pressure and temperature advanced materials synthesis, i.e., mechanics, and particular strength in multiphase flows and multiscale modelling. We provide high-quality training in research.

Institute for Multiscale Thermofluids (IMT)
IMT is our newest research institute. It works at the forefront of research in multiphase, interfacial and reacting flows; bridging the time and spatial scales between molecular processes and technological devices. The institute covers three different yet overlapping research themes:
• Non-continuum and non-equilibrium fluid mechanics
• Multiphase flows, interfaces, and phase change from nano- to macro-scales
• Multiphase, interfacial and chemically reacting flows at the macro scale.
IMT has world-class experimental facilities, including a low-carbon combustion lab, multiphase flows with phase change, and state-of-the art modelling expertise in multiscale and multiphase modelling.

English language requirements
See page 24.

Fees and funding
For fees see page 24 and for funding information see page 26.

Contact
Tel +44 (0)131 651 7213
Email enggradoffice@ed.ac.uk

MSC BY RESEARCH PROGRAMMES
1 YR FT (2 YRS PT AVAILABLE FOR UK/EU STUDENTS)
In addition, our research institutes offer the following MSc by Research programmes:
• Bioengineering: www.ed.ac.uk/pg/873
• Digital Communications: www.ed.ac.uk/pg/24
• Energy Systems: www.ed.ac.uk/pg/25
• Infrastructure & the Environment: www.ed.ac.uk/pg/26
• Integrated Micro & Nano Systems: www.ed.ac.uk/pg/27
• Materials & Processes: www.ed.ac.uk/pg/28

See also...
Much of our research is interdisciplinary and collaborative. You may be interested in programmes offered by the College of Medicine & Veterinary Medicine, the Schools of Biological Sciences, Chemistry, Geosciences or Informatics, or Edinburgh College of Art, which hosts the Edinburgh School of Architecture & Landscape Architecture.

www.ed.ac.uk/studying/prospectus-request
Taught professional doctorates

The professional engineering doctorate (EngD) is a specialist qualification aimed at professional development. The School of Engineering is home to two professional doctorate programmes; one in offshore renewable energy and one in sensor and imaging systems. These training and research programmes are equivalent in standing to a conventional PhD but are aimed at students who want a research career in industry.

You will complete a broad-based, masters-level training programme, then go on to carry out research while working directly with a company.

Offshore Renewable Energy

EngD 4 yrs FT

Programme description

The Industrial Doctoral Centre for Offshore Renewable Energy (IDCORE) is a partnership of the Universities of Edinburgh, Strathclyde and Exeter, together with the Scottish Association for Marine Science and the research association HR Wallingford.

IDCORE’s four-year engineering doctorate programme is a doctoral-level research and training programme, equivalent in academic standing to a conventional PhD, but achieved through research that is much more industrially focused. It is designed to produce graduates who have a sound understanding of the business implications of industrial research. EngD students follow a programme based on three elements: postgraduate-level training; transferrable skills and leadership; and research.

Programme structure

You will spend the first two semesters attending an intensive programme of 12 taught courses, delivered by internationally-renowned academic staff from the partner universities. These first two semesters provide you with the skills required to get started on your research and to succeed in an industry environment. Practical courses teach important laboratory and fieldwork skills, while a group design project helps you develop teamwork skills and apply your knowledge.

Following this initial period of teaching, you will join a sponsoring company to work as a researcher for the rest of the programme. The industrial research is supplemented by summer schools delivered in Oban, Wallingford and Falmouth, and online integrated studies in management, business, innovation, enterprise and entrepreneurship.

At the end of the research work you will deliver either a doctoral thesis or a portfolio of related project work that is examined for the award of an EngD in Offshore Renewable Energy, which is a joint degree from the Universities of Edinburgh, Exeter and Strathclyde.

Funding

A scholarship that covers fees and a stipend is available for suitably qualified and eligible applicants. There are normally 10 of these scholarships available for each intake of students and they are awarded competitively. Full awards (stipend and fees) are available for EU citizens who have been living in the UK for at least three years before the start of the programme. Other EU candidates are eligible for a fees-only award if they are ordinarily resident in a member state of the EU.

Entry requirements

A UK first-class honours degree, or its international equivalent (www.ed.ac.uk/international/graduate-entry). We will also consider your application if you have a UK 2.1 honours degree and an MSc degree with distinction, or their international equivalents, and substantial relevant work experience. We expect you to have a good understanding of one or more branches of science or engineering and some relevant research experience.

Eligibility

UK Visas and Immigration (UKVI) regulations now mean we can accept self-funded overseas students who need a CAS for a Tier 4 Visa.

English language requirements

See page 24.

Fees and funding

For fees see page 24 and for funding information see page 26.

Programme Director

Professor David Ingram

Programme Administrator

Katrina Tait

Email info@idcore.ac.uk

Sensor & Imaging Systems

EngD 4 yrs FT

Programme description

Sensor and imaging systems (SIS) are central to modern life, and appear in fields as diverse as transport, biomedicine, agriculture and environmental monitoring. The Engineering Doctorate in Sensor & Imaging Systems is a vocational programme of leading-edge research for industry in this field. Academically equivalent to a PhD, the EngD emphasises research in a commercial environment, supplemented by masters-level technical training and MBW-style business courses. Projects are all hands-on research on-site with a company. EngD students, known as Research Engineers (REs), work closely with the sponsoring company, under the direction of an industrial supervisor and an academic supervisor from the University.

Programme structure

You will undertake two semesters of research-focused training, delivered by internationally-renowned academic staff. The first semester is based in Glasgow and the second in Edinburgh. The curriculum includes:

• the fundamentals and applications of sensor and imaging systems;
• focused practical courses on laboratory skills; and
• creativity, dissemination, advocacy, enterprise and transferable skills.

This is followed by a 40-month research project, based in a sponsoring company, and business and management courses offered by Heriot Watt University’s Edinburgh Business School. You will normally be matched with a company and project when your offer of a place is made. Projects reflect varied applications of sensing and measurement, across a range of sensing modalities – physical, chemical, mechanical, optical and more.

Funding

Suitably qualified and residentially eligible students receive an award comprising tuition fees, an enhanced tax-free student stipend and funding to support training, conference attendance and travel. Self-funded applicants will also be considered.

Career opportunities

SIS meets a range of societal, research and industrial needs. Sensing is vital for advances in capability across all fields of physics, engineering and chemistry. It is enhanced when individual sensing units are configured in arrays to enable imaging or if multiple sensing functions are integrated in a single smart system. Industrial SIS applications are ubiquitous: from mass-produced sensors found in modern smartphones and automobiles to the state-of-the-art, specialist, high-value sensors routinely used in oil and gas recovery, scientific equipment, machine tools, medical equipment and environmental monitoring.

Entry requirements

A UK 2.1 honours degree or its international equivalent (www.ed.ac.uk/international/graduate-entry), in a relevant science or engineering discipline. Entry is competitive, so we would prefer a UK first class honours degree, or its international equivalent, in engineering, physics, chemistry or another relevant physical science. We may also consider your application if you have other qualifications or experience, or a background in another field.

English language requirements

See page 24.

Fees and funding

For fees see page 24 and for funding information see page 26.

Programme Director

Doctor Tony Kelly (anthony.kelly@glasgow.ac.uk)

Programme Administrator

Ilan Williams, CENSIS (ilan.williams@censis.org.uk)

Edinburgh enquiries

Professor Ian Underwood (ianderwood@ed.ac.uk)
About the School of Engineering

Our School is a hotbed of innovation. In the 2014 Research Excellence Framework (REF), 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 430 postgraduates, 1,400 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. Our IMPACT (Implantable Microsystems for Personalised Anti-Cancer Therapy) project will use miniature wireless sensors for minute-to-minute monitoring of individual tumours. Both projects are in collaboration with clinicians from the Western General Hospital in Edinburgh and are funded by the Engineering and Physical Sciences Research Council.

Digital communications
The Institute for Digital Communications pioneers new theories and techniques in the fields of signal processing, imaging and communications, technologies that have come to power the global economy. Among recent highlights, Professor Harald Haas’ Li-Fi system of lightbulb-based wireless communication was named among the world’s top inventions by Time magazine.

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.

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, multiscalar modelling, multiphase 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 nanoscale, 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.
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 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.

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 major collaboration between the University and the National Health Service. In addition to outstanding University-based resources, postgraduate programmes use visits to external sites and facilities to gain access to state-of-the-art resources and to contextualise learning.

Collections of the University
The University of Edinburgh has one of the world’s great collections, which has been growing ever since its foundation in 1583. Our collections include rare books, archives and manuscripts, art, historical musical instruments and a wide range of museum objects from geological specimens to anatomical models. If laid out end to end, we would have almost 60 kilometres of shelving and storage space devoted to our heritage material, from 1st-century Greek papyrus fragments to new works of sculpture. This is curated by specialist staff across 45 sites and used for our teaching and research and by the wider public community.

The Centre for Research Collections in the Main Library is the hub for all our collections, where specialist curators make them available for study, research and pleasure. Postgraduate students are welcome to study original objects and have made many important research discoveries while working on the archives. You will find an incredible range of material in our collections that is available nowhere else in the world.

Community

Our graduate community is large and diverse, composed of 100 academics and more than 430 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 Materials Science and Engineering;
- Centre for Science at Extreme Conditions; Scottish Mechatrontransduction Consortium;
- 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 Harald Haas, Chair of Mobile Communications, has attracted international interest with his “Li-fi” invention. He was named one of the UK’s 10 RISE leaders in the Engineering and Physical Sciences Research Council’s 2014 awards Recognising Inspirational Scientists and Engineers (RISE).

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 3.84x2.88mm.

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More information: www.erp.ac.uk
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/lehy-edin

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, 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. We offer on-campus and online workshops and one-to-one study skills consultations, plus online advice and learning materials. Workshops and learning resources cover key topics tailored to different academic stages, including: pre-arival 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 workshop programme is 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.

We provide high-quality, tailored support to all students. 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/iad/postgrad

Platform One
Platform One is an online meeting place where members of the University community, past and present, can gather. It aims to provide a supportive environment where students, alumni, staff and volunteers can share knowledge and experiences. Together, we form a single community that meets on Platform One. Join us and find out more about the people and possibilities.

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

Backing bright ideas
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 David Hunter, inventor of the performance-tracking golf watch Shot Scope; Orfeas Boteas, creator of the Dehumaniser sound effects software used by Hollywood movies and blockbuster video games; and Enactus Edinburgh, a team of student social entrepreneurs who represented the UK in the Enactus World Cup with their local and international projects.

Research support
We encourage our researchers to gain experience and skills through presenting and researching 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),
Applications and fees

We have an online application process for all postgraduate programmes. The system gives full instructions, including details of any supporting documentation you need to submit, such as references, degree transcripts or research proposals.

When applying, you will set up an account, which lets you save your application and continue at another time. Full guidance on our application system is available at: www.ed.ac.uk/postgraduate/applying

General requirements
Our usual entrance requirement for postgraduate study is a UK 2:1 honours degree, or its international equivalent (see www.ed.ac.uk/international-graduate-entry), in engineering, chemistry, biosciences, geosciences, physical sciences or mathematics. You will also need to meet the University’s language requirements (see right). Entry requirements for individual programmes can vary, so check the details for the specific programme you wish to apply for.

Our selection process for PhD programmes is competitive. Experience working within your chosen field can be beneficial, but an MSc is not always required for entrance to doctorate-level studies.

References
For applications to taught programmes, the normal requirement is one reference, although an additional reference may be requested in individual cases. For applications to research programmes, two references are required. You should check online for exact requirements for your intended programme of study. For general guidance on references, visit: www.ed.ac.uk/postgraduate/applying/references

Deadlines
Some programmes have application deadlines. Please check online for details. For all other programmes, you are encouraged to apply no later than one month prior to entry to ensure there is sufficient time to process your application. However, earlier application is recommended, particularly where there is a high demand for places or when a visa will be required. Should you wish to submit a late application, please contact us for guidance. If you are applying for funding for a taught programme, then in most cases you will need an offer to study with us before you can make your funding application.

English language requirements
You must demonstrate a level of English language competency at a level that will enable you to succeed in your studies, regardless of your nationality or country of residence. We accept the following English language qualifications at the grades specified:

Leading Major Programmes
• IELTS Academic: total 7.0 (at least 6.0 in each module).
• TOEFL-iBT: total 100 (at least 20 in each module).
• PTE Academic: total 67 (at least 56 in each of the Communicative Skills sections; the Enabling Skills sections are not considered).
• CAE and CPE: total 185 (at least 169 in each module).
• Trinity ISE: ISE III (with a pass in all four components).

All other programmes
• IELTS Academic: total 6.5 (at least 6.0 in each module).
• TOEFL-iBT: total 92 (at least 20 in each module).
• PTE Academic: total 61 (at least 56 in each of the Communicative Skills sections).
• CAE and CPE: total 176 (at least 169 in each module).
• Trinity ISE: ISE II (with distinctions in all four components).

All other programmes
• IELTS Academic: total 6.5 (at least 6.0 in each module).
• TOEFL-iBT: total 92 (at least 20 in each module).
• PTE Academic: total 61 (at least 56 in each of the Communicative Skills sections).
• CAE and CPE: total 176 (at least 169 in each module).
• Trinity ISE: ISE II (with distinctions in all four components).

Please note:
English language requirements can be affected by government policy so please ensure you visit our degree finder to check the latest requirements for your programme: www.ed.ac.uk/postgraduate/degrees

Your English language qualification must be no more than three and a half years old at the beginning of your programme, unless you are using IELTS, TOEFL, PTE Academic or Trinity ISE, in which case it must be no more than two years old.

We also accept recent degree-level study that was taught and assessed in English in a majority English-speaking country (as defined by UK Visas & Immigration), or at a university in a non-majority English-speaking country which has specifically been approved by the University of Edinburgh’s Admissions Qualifications Group. A list of approved universities is published on our website. If you are not a national of a majority English speaking country, then your degree must be no more than three and a half years old at the beginning of your programme of study.

We do not require you to take an English language test before you apply. Abbreviations: IELTS − International English Language Testing System; TOEFL-iBT − Test of English as a Foreign Language Internet-Based Test; PTE − Pearson Test of English; CPE − Certificate of Proficiency in English; CAE − Certificate in Advanced English; Trinity ISE − Integrated Skills in English.

www.ed.ac.uk/english-requirements/pg

Tuition fees
The following table provides an overview of indicative fee levels for programmes commencing in 2020. Please note:

• International students starting full-time taught programmes of study lasting more than one year will be charged a fixed annual fee.
• All other students on full-time and part-time programmes of study lasting more than one year should be aware that annual tuition fees are subject to revision and are typically increased by approximately five per cent per annum. This annual increase should be taken into account when you are applying for a programme.
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For UK/EU students

<table>
<thead>
<tr>
<th>Programme</th>
<th>Annual fee</th>
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<tbody>
<tr>
<td>Taught programme 1-year FT</td>
<td>£13,000</td>
</tr>
<tr>
<td>Taught programme 2-years PT</td>
<td>£6,500</td>
</tr>
<tr>
<td>MSc by Research 1-year FT</td>
<td>£8,750</td>
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<tr>
<td>MSc by Research 2-years FT</td>
<td>£4,375*</td>
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<tr>
<td>All other research programmes FT</td>
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<tr>
<td>All other research programmes PT</td>
<td>£2,164*</td>
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</table>

For international students

<table>
<thead>
<tr>
<th>Programme</th>
<th>Annual fee</th>
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All other fees quoted are indicative of 2020/21 fee levels. Because these figures are indicative, it is important you check online before you apply and check the up-to-date fee level that will apply to your specific programme: www.ed.ac.uk/student-funding/tuition-fees/postgraduate

Asylum seeker tuition fee status and scholarship
Information for applicants seeking asylum from within the United Kingdom, who wish to commence a programme of study at the University in 2020, is available online. This includes our tuition fee rates and scholarship opportunities: www.ed.ac.uk/student-funding/asylum

Tuition fees for EU students
EU students enrolling in the 2020/21 academic year will be admitted as Scottish/EU fee status students. Taught masters students will be eligible for the same tuition support as Scottish domiciled students from the Student Awards Agency Scotland (SAAS).

For UK/EU students

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<tr>
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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 below).

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

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

• Edinburgh Global Research Scholarships
  These scholarships are designed to attract high-quality international research students to the University: www.ed.ac.uk/student-funding/global-research

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

• MasterCard Foundation Scholars Programme (Africa)
  A number of scholarships for applicants who are residents and citizens of a Sub-Saharan African country will be available for eligible masters programmes. The scholarships cover full tuition fees and expenses for accommodation and maintenance for African scholars with few educational opportunities: www.ed.ac.uk/student-funding/mastercardfnd

• Principal’s Career Development PhD Scholarships
  These provide a valuable opportunity for PhD students to undertake training and skills development and offer opportunities in areas such as teaching, public engagement, entrepreneurship, data science, and research. Each award covers the UK tuition fee and a stipend: www.ed.ac.uk/student-funding/development

Research council awards
Research council offer awards to masters and PhD students in most of the Schools within the University of Edinburgh. All studentships applications from the research councils must be made through the University, through your School or College office. Awards can be made for both taught and research programmes. Normally only those UK/EU students who have been resident in the UK for the preceding three years are eligible for a full award. For some awards, candidates who are EU nationals and are resident in the UK may be eligible for a fees-only award. The UK Government has confirmed that EU postgraduate research students commencing their studies in 2020/21 will retain their fee status and eligibility for research council support for the duration of their programme: www.ed.ac.uk/student-funding/research-councils

The University also offers a number of scholarships in partnership with the following overseas government agencies:

• Mexico
  Banco de Mexico and the Banco de Mexico’s FIDHER Trust (FIDHER): www.fidher.org.mx
  Fundacion Mexicana para la Educacion, la Tecnologia y la Ciencia (FUNED): www.funedmex.org

• Pakistan

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

• Erasmus+
  The Erasmus+ Master Loan helps masters students with their living and tuition costs when studying in an Erasmus+ country other than where they live or where they took their first degree. For more information: erasmusplus.org.uk/master-loan

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

• Postgraduate Loans (PGLO)
  Northern Ireland
  Student Finance Northern Ireland offers eligible students a tuition fee loan for taught and research masters programmes, which will be paid directly to the University: www.studentfinanceeni.co.uk

• Postgraduate Loans (SAAS)
  Scotland and EU
  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. Full-time students resident in Scotland 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
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.
On 23 June 2016 the UK electorate voted in a national referendum to leave the European Union. EU postgraduate taught students enrolling in the 2020/21 academic year will be admitted as Scottish/EU fee status students and eligible for the same tuition support as Scottish domiciled students for the duration of their studies. This will still be the case in the event of a Brexit no deal scenario. For the latest information for students and applicants from the EU, please visit our website: www.ed.ac.uk/news/jeu

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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