



THE UNIVERSITY of EDINBURGH  
School of Engineering

# Engineering Programme Guide

Postgraduate - 4+1 Master of Science MSc

2022/23

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## Introduction

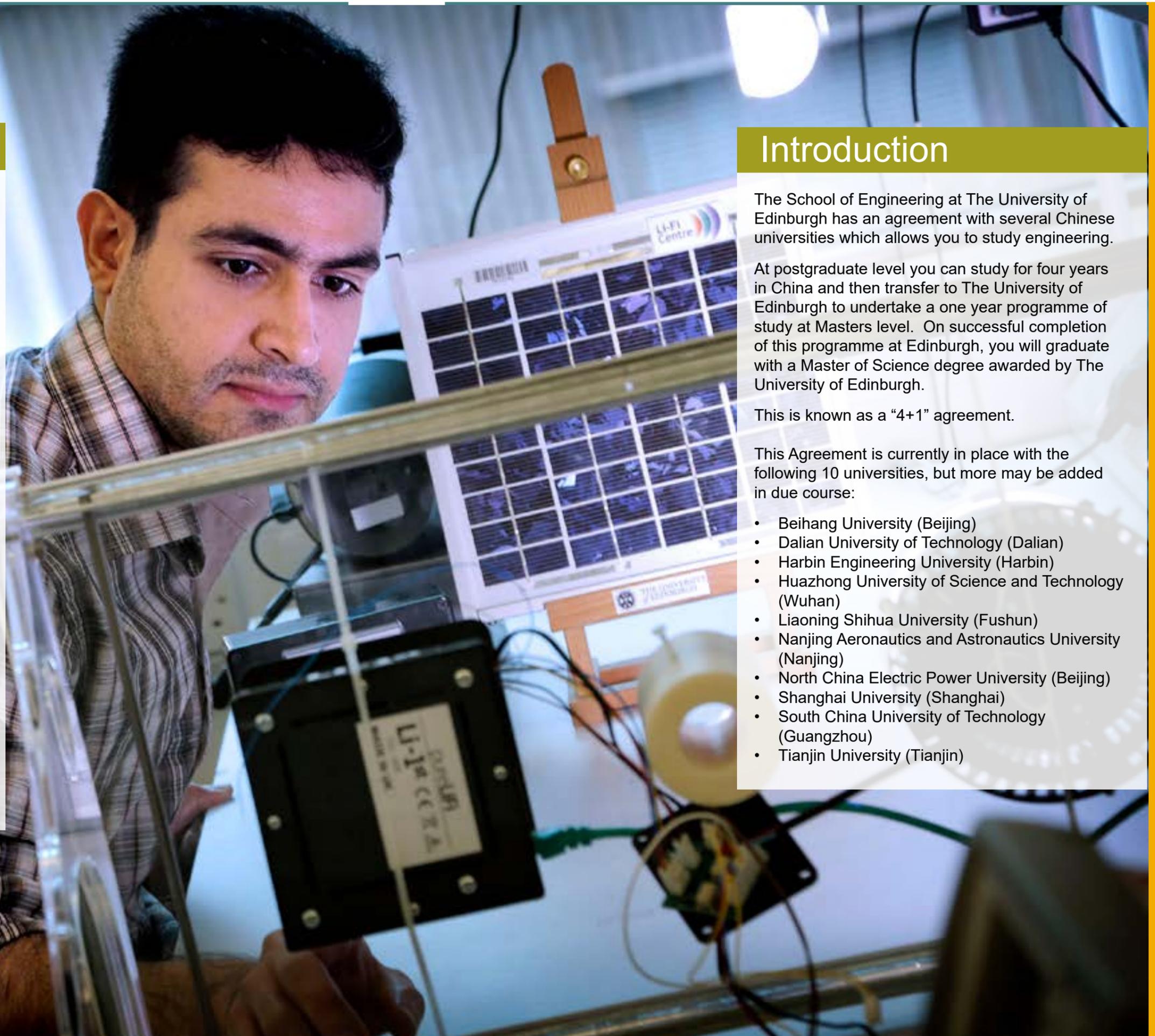
The School of Engineering at The University of Edinburgh has an agreement with several Chinese universities which allows you to study engineering.

At postgraduate level you can study for four years in China and then transfer to The University of Edinburgh to undertake a one year programme of study at Masters level. On successful completion of this programme at Edinburgh, you will graduate with a Master of Science degree awarded by The University of Edinburgh.

This is known as a “4+1” agreement.

This Agreement is currently in place with the following 10 universities, but more may be added in due course:

- Beihang University (Beijing)
- Dalian University of Technology (Dalian)
- Harbin Engineering University (Harbin)
- Huazhong University of Science and Technology (Wuhan)
- Liaoning Shihua University (Fushun)
- Nanjing Aeronautics and Astronautics University (Nanjing)
- North China Electric Power University (Beijing)
- Shanghai University (Shanghai)
- South China University of Technology (Guangzhou)
- Tianjin University (Tianjin)



# Influencing the world since 1583



## Welcome from the Director of Learning and Teaching

We are delighted that you are considering coming to join us at the School of Engineering to pursue your Masters programme. Engineering has a long tradition at Edinburgh having been taught in one form or another since 1673, with the Regius Chair of Engineering being founded in 1868.



Most recently, in the UK's 2014 assessment of research quality, the School of Engineering (jointly with Heriot Watt University) achieved the highest Research Power of any UK engineering submission to an assessment panel; with 94% of research activity rated "world leading" or "internationally excellent".

The School has a notable record in innovation, with successful start-ups across a wide range of industrial sectors, with each programme closely linked to relevant industrial organisations.

The School has an enviable suite of laboratories in the areas of Structures, Fire Safety, Wave and Tidal Testing, Microelectronics, Bioengineering, Ice, and Membrane Separations; it has recently developed new laboratories for Composite Materials, High Temperature Superconductivity, Engines and Agile Tomography.

Today the Global Grand Challenges agenda puts Engineering at the forefront of 21st Century academic activity. Our innovative Masters programmes, underpinned by world-leading research, prepare our Masters graduates for tackling these societal challenges whether through work in industry or further study. Today's graduates must be equipped with the knowledge and skills not just for today's needs but also the needs of the future.

We encourage applications from highly qualified and highly motivated students from all corners of the world to apply to our leading edge and vibrant programmes, to become a member of our vibrant academic community working together for a better future.

**Professor Tim Straford**  
Director of Learning and Teaching

## Where is Edinburgh and what is it like?

### Scotland

Scotland, together with England, Wales and Northern Ireland, makes up the United Kingdom. It is 600 kilometres north of London (approximately 1 hour by plane or 4.5 hours by train). There are easy flight connections to China via London, Frankfurt, Istanbul, Paris or Amsterdam.

Scotland enjoys mild winters and warm summers, and has some of the most unspoiled scenery in Europe. With only 10% of the UK population and 33% of the land, there are plenty of wide open spaces to explore.

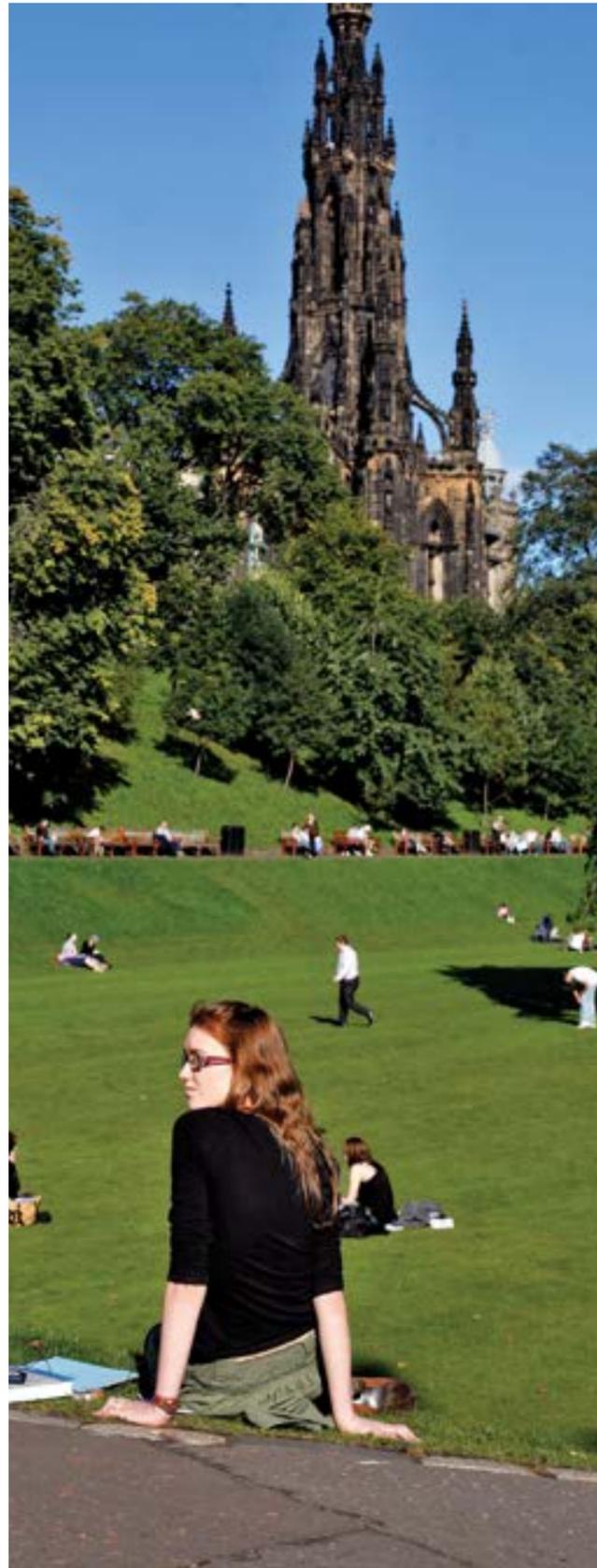
### City of Edinburgh

Edinburgh is the capital of Scotland, and has a population of over 500,000. However, it attracts over 2 million tourists every year, thanks to its historic centre and beautiful location. It is situated on the river Forth in the east of Scotland, and it is easy to visit the beaches and mountains for which Scotland is famous. Edinburgh is regularly voted one of the top places to live in the UK.

### Accommodation

The University guarantees a place in university accommodation for all students from out with the city for the first year of study, provided that you apply by the deadline.

There are many choices of university accommodation, from student self-catering flats to fully catered residences. All of the accommodation is either a short walk or bus ride from the city centre and the university. You will spend most of your two years studying on the Science and Engineering campus, which is about 10 minutes by bus from the city centre, however there is plenty of student accommodation nearby.



## Why should I study at the University of Edinburgh?

### Reputation of the University

The University of Edinburgh, situated in the capital city of Scotland, is one of the six “ancient” universities in the UK, and University founded in 1583. The University of Edinburgh is consistently ranked as one of the world’s top 50 universities.

In 2021, the University was ranked 20th in the world in the QS World University Rankings. It is also one of the largest universities in the UK, with nearly 46,000 students. For most of its history, the University of Edinburgh has had a reputation for attracting students from all over the world, and currently has over 16,000 international students from over 140 countries.

The University of Edinburgh offers over 300 degree programmes, from Arts and Humanities, Science and Engineering, to Law and Medicine. It also has over 60% of all Scotland’s top researchers.

A degree from the University of Edinburgh is recognised across the world.

### Reputation of the School of Engineering

The School of Engineering is part of the College of Science and Engineering within the University, which is one of the largest science and engineering groupings in the UK. The College has over 10,000 students, over 3500 academic and support staff, and is situated on its own campus just outside the city centre.

The University of Edinburgh and Heriot-Watt University obtained outstanding results in REF2014 for the Edinburgh Research Partnership in Engineering (ERPE). 94% of our overall research activity is world-leading or internationally excellent. This, combined with the number of academic staff involved, makes Edinburgh the UK powerhouse in Engineering.

### Prospects after you graduate

A degree from The University of Edinburgh is recognised throughout the world and is valued very highly by employers.



## 4+1 Programmes

### What can I study at the University of Edinburgh?

#### Taught Master of Science(MSc) Programmes

The 4+1 programme is available to 4th year students who will complete their Bachelor degree in China, and who then wish to undertake a one-year postgraduate Master's programme at the University of Edinburgh.

Following a taught Master of Science (MSc) programme will typically mean that you take two semesters of taught courses, followed by a research project for which you will write a dissertation.

Seven MSc programmes are offered under the 4+1 partnership agreement:

#### Advanced Chemical Engineering

The Advanced Chemical Engineering programme spans a wide variety of topics from the fundamentals on a molecular scale to applications and processes, and is advised by an Industrial board of Experts. From carbon capture to sustainable water resources, from alternative energy technologies to advanced pharmaceutical processes, chemical engineers address the frontiers of important global challenges. A one year programme at the University of Edinburgh will immerse you in the most current developments in these fields through a combination of taught modules, workshops, a research dissertation and a number of supporting activities, with a particular emphasis on multi-scale approaches to chemical engineering from nano-scale to process scale. A unique feature of the programme

is a strong involvement of the chemical engineering industry. The programme is advised by an Industrial Board, while summer research dissertation projects are formulated and co-advised by industrial partners, with topics ranging from computational fluid dynamics for medical applications to carbon capture and storage to continuous manufacturing for the pharmaceutical industry.

For more information on this MSc programme please visit:

[www.ed.ac.uk/pg/913](http://www.ed.ac.uk/pg/913)

#### Advanced Power Engineering

The University of Edinburgh offers a two-year MSc programme in Advanced Power Engineering. The programme is designed to train power engineers in the most current developments in the field, and help them develop fundamental and applied research skills through a combination of taught modules, workshops and a comprehensive research dissertation carried out during the second year of the programme, supported by the internationally leading experts of the Institute for Energy Systems. We train the next generation of industry-ready engineers who are aware of the most recent, cutting edge developments in power engineering and have the skills required to thrive within both industrial and academic settings. The programme develops throughout the first year from advanced fundamental topics and research tools in electrical power



## 4+1 Programmes

### What can I study at the University of Edinburgh?

engineering, to specialist courses on emerging technologies and advanced numerical methods for power engineering problems. It culminates in the second year with a two-semester industrial or academic research project.

For more information on this MSc programme please visit:

[www.ed.ac.uk/pg/960](http://www.ed.ac.uk/pg/960) **Electrical Power Engineering**

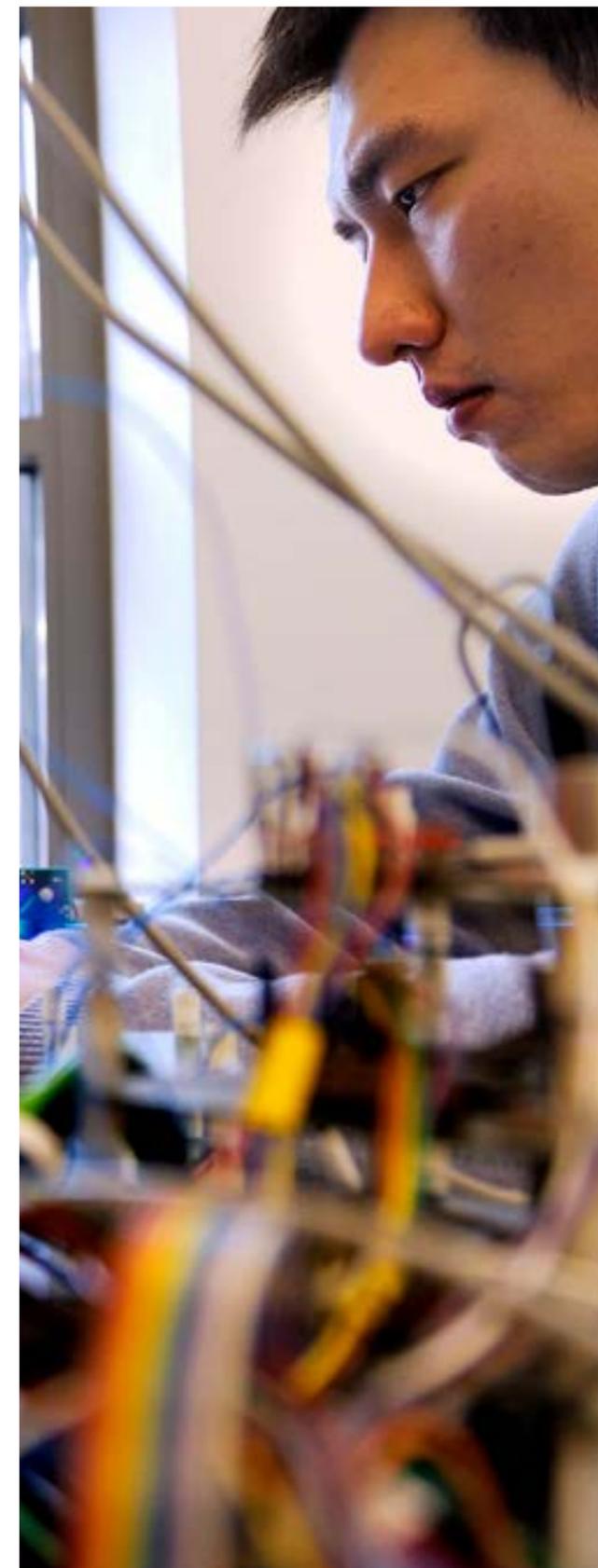
This one-year programme is designed to equip graduates and professionals with a broad and robust training on modern power engineering technologies, with a strong focus on renewable energy conversion and smart grids. It is suitable for recent graduates who wish to develop the specialist knowledge and skills relevant to this industry and is also suitable as advanced study in preparation for research work in an academic or industrial environment. In semesters 1 and 2, the programme comprises a mixture of taught courses, workshops and a group design project, led by leading experts in the field, covering the key topics in power systems, electrical machines and power electronics. The final part of the programme is an individual dissertation, which provides a good opportunity for students to apply their acquired skills to real problems in electrical power engineering.

For more information on this MSc programme please visit:

[www.ed.ac.uk/pg/937](http://www.ed.ac.uk/pg/937)

#### Electronics

This programme offers distinct specialisation areas in electronics: analogue VLSI design, bioelectronics and analogue and digital systems. In analogue VLSI design, our facilities include a unique custom designed analogue integrated circuit specifically designed to support laboratory based teaching. Our advanced design and prototyping laboratories,



## 4+1 Programmes

### What can I study at the University of Edinburgh?

advanced micro and nano fabrication facilities and state-of-the-art digital system laboratories use the latest industry standard software tools. Alternatively, students may specialise in the emergent discipline of bioelectronics where our research and teaching interests include access to the fabrication facilities at the Scottish Microelectronics Centre.

For more information on this MSc programme please visit:

[www.ed.ac.uk/pg/669](http://www.ed.ac.uk/pg/669)

#### Signal Processing & Communications

This programme provides graduates and working professionals with a broad training in signal processing and communications. It is suitable for recent graduates who wish to develop the specialist knowledge and skills relevant to this industry and is also suitable as advanced study in preparation for research work in an academic or industrial environment or in a specialist consultancy organisation. 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. The MSc project provides a good opportunity for students to work on state-of-

the-art research problems in signal processing and communications.

For more information on this MSc programme please visit:

[www.ed.ac.uk/pg/20](http://www.ed.ac.uk/pg/20)

#### Sustainable Energy Systems

This internationally renowned degree, based within a world-leading renewable energy research group, equips graduates and professionals with a broad and robust training. Wind, marine and solar energy technologies are covered, as well as the wider environment in which they fit, including: resource assessment; energy production, delivery and consumption; efficiency; sustainability; economics, policy and regulation; and grid/off-grid systems. In addition, our MSc students actively engage in research as part of their dissertation projects either within the Institute for Energy Systems or with industry, with some joining our PhD community afterwards. This programme is affiliated with the University's Global Environment & Society Academy.

For more information on this MSc programme please visit:

[www.ed.ac.uk/pg/22](http://www.ed.ac.uk/pg/22)



## 4+1 Programmes

### What can I study at the University of Edinburgh?

#### Structural & Fire Safety Engineering

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 behaviours. You will become 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 Establishment (BRE) Centre for Fire Safety Engineering hosts bespoke equipment to support groundbreaking research and teaching, with combined thermal and mechanical loading and use of the latest image analysis techniques.

For more information on this MSc programme please visit:

[www.ed.ac.uk/pg/423](http://www.ed.ac.uk/pg/423)

#### Digital Design and Manufacture

Digital Design and Manufacturing refers to a convergence of complementary computing technologies that, in combination, have the potential to create an industrial revolution whose impact on productivity is comparable to the introduction of steam power or the adoption of mass production. This course provides students with a broad understanding of the theories and practices required to enable successful implementation of these digital technologies in industrial applications.

For more information on this MSc programme please visit:

[www.ed.ac.uk/pg/1040](http://www.ed.ac.uk/pg/1040)



## 4+1 Programmes How much will it cost?

### Fees

Tuition fees for the 4+1 Masters programme for academic year 2022/23 are £31,100.

### Accommodation

The postgraduate accommodation is based across a number of sites, typically located within a short walk or bus ride from the centre of Edinburgh and with many being close to key University buildings and facilities.

All new students at the University of Edinburgh are covered by the University Accommodation Guarantee

The rates for accommodation vary depending on location and room type - please review the options available here.

University accommodation rents include utility costs; personal contents insurance; data network facilities and support from the Residence Life team. Cleaning and housekeeping vary according to the location and type of accommodation offered but usually include all common areas, staircases etc. within our premises.

### Living expenses

Information on the cost of living in Edinburgh for a typical academic year can be found on our university website: <http://www.ed.ac.uk/studying/international/finance>.

Of course, these calculations will vary according to your lifestyle.

### Scholarships

All Chinese students who take part in the 4+1 scheme are eligible for a £3,000 scholarship per year. Students studying on the two-year MSc in Advanced Power Engineering will receive a scholarship payment of £2,000 per year. (Approx £1 = 8.57 Yuan.)



## I am thinking of applying. What do I need to do now?

### Applying for the 4+1 programme

Thoroughly explore the website to identify your preferred programme of study: <http://www.ed.ac.uk/studying/postgraduate/degrees>

Feel free to contact the Student Recruitment Officer to discuss your application. If you are in 4th year now, tell the International Office that you would like to apply.

### Entry requirements

Minimum entry requirements are the equivalent of a UK 2:1 degree in a relevant discipline. Students whose first language is not English must show evidence of one of the qualifications below.

- IELTS Academic: total 6.5 (at least 6.0 in each module).
- TOEFL-iBT: total 92 (at least 20 in each module).
- PTE(A): total 61 (at least 56 in each of the Communicative Skills sections).
- CAE and CPE: total 176 (at least 169 in each module).

### Interviews

We will ask for initial application documents before the interview. You will be interviewed by someone from the School of Engineering in China in April/May 2022. This interview will be in English, and will test your knowledge of the engineering discipline you are studying, as well as your language ability. If your English language level is below the requirements for entry then options

for attending pre-sessional English classes will be explored at interview

### After your interview

We will inform you as soon as possible after the interview if your application can progress to the next stage. If successful, you will be required to make an application through our online application system for all postgraduate programmes. The system gives full instructions, including details of any supporting documentation you need to submit, such as references, degree transcripts etc.

### Receiving an offer

You will receive a Conditional Offer for your Master's programme which will be converted to an Unconditional Offer when you meet the conditions. The conditions are normally the completion of your Bachelor degree in China and/or English Language Certificate.

### Visa

Once you receive your Unconditional Offer you must apply for a visa.

### Late Applications

Late applications may still be considered for 4+1 programmes. Contact your International Office immediately if you wish for a late application to be considered.



## Further Information

### Useful websites

- The University of Edinburgh: [www.ed.ac.uk](http://www.ed.ac.uk)
- Information for International Students: <http://www.ed.ac.uk/studying/undergraduate/international/>
- School of Engineering: [www.eng.ed.ac.uk](http://www.eng.ed.ac.uk)
- English Language Teaching Centre: <http://www.ed.ac.uk/english-language-teaching>
- Information on Fees at The University of Edinburgh: <http://www.ed.ac.uk/student-funding/tuition-fees>
- Universities and Colleges Admissions Service (UCAS): [www.ucas.com](http://www.ucas.com)
- Undergraduate Degree Programmes: <https://www.eng.ed.ac.uk/undergraduate/engineering-degrees>
- Postgraduate Degree Programmes: <https://www.eng.ed.ac.uk/postgraduate/degrees/msc-taught/>

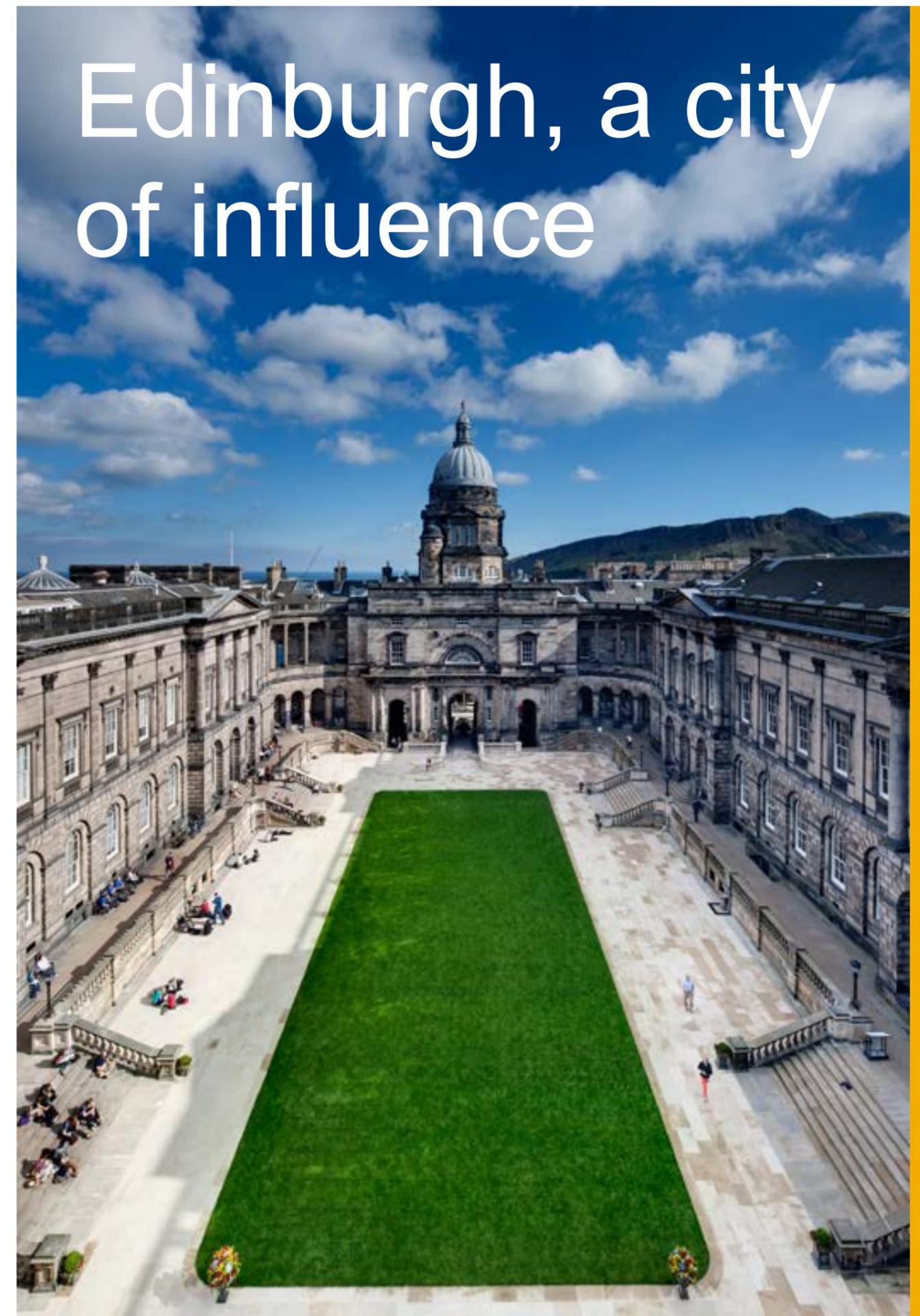
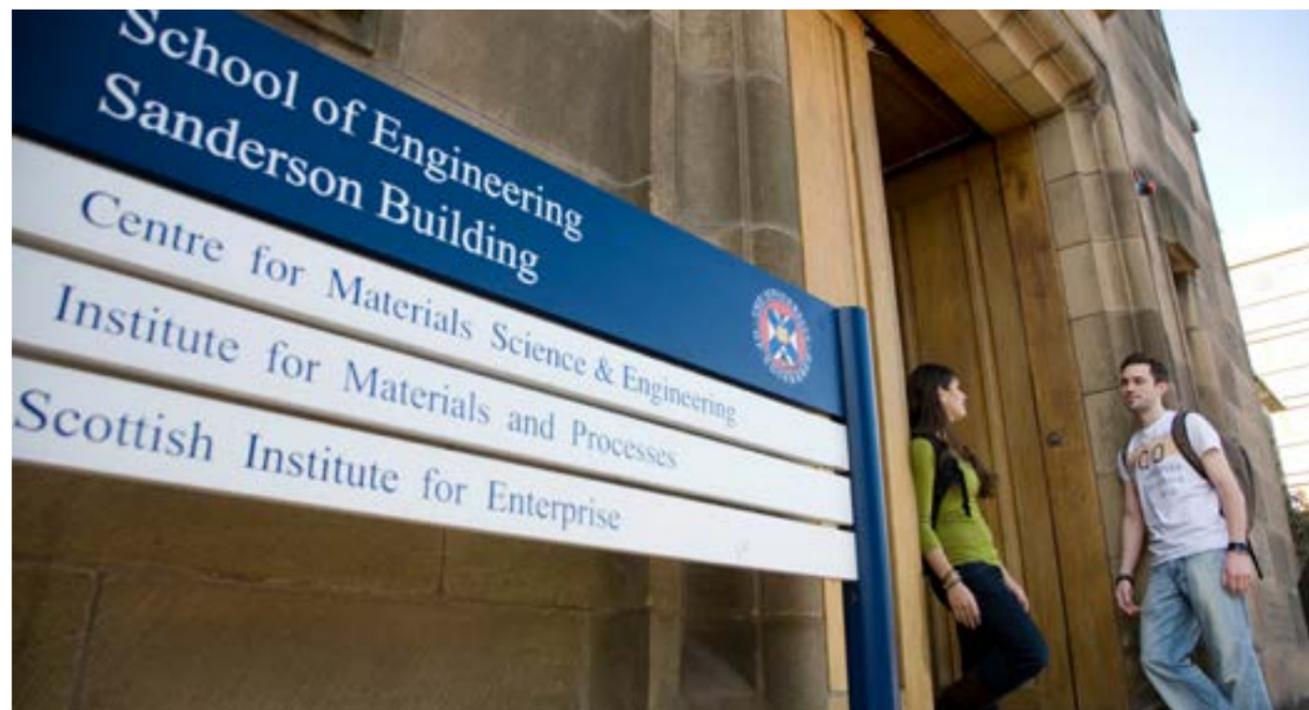
### Checklist

- If you are thinking of applying, start to plan now
- Inform your International office of your interest
- Work out which degree programme you are interested in studying undergraduate or postgraduate at Edinburgh
- Start preparing for your IELTS test
- Be prepared for an interview in April/May 2020
- If successful, apply directly to us
- Apply for a visa as soon as you can
- Register for the English language courses at The University of Edinburgh
- Prepare to pay fees for English language courses and university fees
- Book accommodation for start of university

### Contact details

Recruitment and International Partnerships Manager  
School of Engineering  
Faraday Building  
King's Buildings  
Mayfield Road  
Edinburgh EH9 3JL

Email: [futurestudents@ed.ac.uk](mailto:futurestudents@ed.ac.uk)



# Edinburgh, a city of influence

*The University of Edinburgh is ranked 20th in the world by the QS World University Rankings 2021.*



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