MANCHESTER
1824
The University of Manchester

ELECTRICAL AND ELECTRONIC ENGINEERING

POSTGRADUATE COURSES

SHAPE YOUR FUTURE

Learn today, lead tomorrow

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SHAPE YOUR FUTURE: CAREERS

We are ranked 2nd in the UK for research power in Engineering.
Overall research quality in REF 2021

Ranked top ten globally for action towards the UN Sustainable Development Goals.
THE University Impact Rankings 2022

28th best university in the world, 9th in Europe and 6th in the UK.
QS World Rankings 2023

Manchester has been voted the top city to live in the UK, and the third best in the world.
The Economist's Global Liveability Index 2022 and Time Out Magazine survey (2021) respectively

Read more about our rankings and reputation including REF results.

CAREER CATEGORIES

Master's courses at The University of Manchester are designed to build the specialist knowledge and skills you need to enhance your employability and tackle the challenges facing our world today.

Our degrees are delivered with sustainability at their core, to give you the best grounding for the careers of the future. There are common themes and ideas that underpin our master's, which we have illustrated throughout this brochure. Look out for the following across our courses:

A ENERGY CAREERS: our master's courses equip you with first-class analytical skills that prepare you for careers in a world that is working through the energy transition.
B BUILDING SUSTAINABLE FUTURES CAREERS: securing existing infrastructures and planning for future sustainable developments are key aspects of our postgraduate courses.
C LEADING CHANGE CAREERS: a changing world requires new leadership, and our master's courses develop you as decision-makers and forward-thinkers.
D INNOVATING TECHNOLOGY CAREERS: as global priorities evolve, so do technological solutions. Our master's degrees train you in the most current technology and encourage innovations for our future.
E RESEARCH FOR NEW HORIZONS: our master's courses can lead you to further study with postgraduate research programmes (PhDs) where you will investigate solutions and methods for future science and engineering practitioners.

CAREERS SERVICE

As a postgraduate student you may already have a career path in mind, but we'll do all we can to help you get there. We'll give you the opportunities to develop your skills and networks, and support tailored to your needs.

Our first-class Careers Service offers support and advice throughout your time at The University of Manchester, to help you make the most of your time here and best prepare you for your future. From CV and application advice to employer workshops and our job platform Career Connect, the Careers Service for students and graduates can help to put you in the best position to secure employment and act as a launchpad for your long-term career aspirations.

SUSTAINABILITY

LEADING THE WORLD ON SUSTAINABLE DEVELOPMENT

The quality and scale of our research, when compared against the UN's Sustainable Development Goals (SDGs), has been ranked in the top ten globally by the Times Higher Education University Impact Rankings in 2022.

The 17 SDGs are the world's call to action on the most pressing challenges and opportunities facing humanity and the natural world, and we are playing a leading role in tackling them.

As one of the world's leading research institutions, as well as being the only university in the UK to have social responsibility as a core goal, The University of Manchester is proactively tackling the SDGs in four ways – through our research, learning and students, public engagement activities and responsible campus operations.

Our 2021/22 SDG report outlines how we are tackling the SDGs.

OUR MASTER'S COURSES CONNECT WITH THE FOLLOWING UNITED NATIONS SUSTAINABILITY DEVELOPMENT GOALS:

- Goal 7: Affordable and clean energy
- Goal 9: Industry, innovation and infrastructure
- Goal 11 Sustainable cities and communities
- Goal 12: Responsible consumption and production
- Goal 13: Climate action

FACILITIES AND RESOURCES

THE FUTURE OF LEARNING IN MANCHESTER

Our Home for Engineering and Materials is transforming the way our students study, research, and shape the world forever. Now, more than ever, is the time to study at The University of Manchester.

At the heart of the building's design is a desire to bring together all disciplines, in one connected and dynamic environment. The space supports a variety of teaching and learning styles, through blended lecture theatres, multi-purpose study spaces and over 250 state-of-the-art laboratories. There is also a range of technical spaces to help encourage students to shape their own learning environment.

We want our facilities to show ambition as well as recognise the real-world challenges that students will face in addressing some of the most pressing issues of our time. Our Home for Engineering and Materials boasts some of the most unique, industry-leading equipment and instrumentation in the sector to meet today's requirements and those of the future.

Explore Our Home for Engineering and Materials.

MSC ADVANCED CONTROL AND SYSTEMS ENGINEERING

Read more about this course

This course has an extended research option: MSc Advanced Control and Systems Engineering with Extended Research

Control Engineering is a multi-disciplinary subject, with applications across a wide range of industrial sectors. The Control Systems Group in the Department of Electrical and Electronic Engineering at The University of Manchester has been running an MSc course in Advanced Control and Systems Engineering since 1968. The course is geared for graduates from a variety of scientific and engineering disciplines.

The aims of the course are to:

- provide advanced education in control and systems engineering, emphasising modern theoretical developments and their practical application
- give a sound fundamental understanding of the principles underlying the operation of control systems
- enable students to apply modern control principles in various areas of industry

Students acquire a range of intellectual skills that cover the design, analysis and simulation of control systems. A strong emphasis is placed on practical and transferable skills through laboratory exercises and the use of software packages.

GRADUATE CAREERS

This course could lead you to a career in one of the following categories:

B BUILDING SUSTAINABLE FUTURES CAREERS
C LEADING CHANGE CAREERS
D INNOVATING TECHNOLOGY CAREERS
E RESEARCH FOR NEW HORIZONS

WHERE DO OUR GRADUATES WORK?

- Thales
- Accenture
- SIEMENS
- Multivista Global Pvt. Ltd.
- KBR (UK) Limited

WHAT DO OUR GRADUATES DO?

- Project Manager
- Consultant Engineer
- Electrical Engineer
- Senior Process Control Engineer
- Control Engineer

COURSES IN RELATED SUBJECT AREAS:
Electrical and Electronic Engineering

In 2018 we celebrated the 50th anniversary of our MSc course. In that time graduates of the course have achieved top ranking industrial and academic positions in their home countries, in the UK and around the world.

Graduates from the course are employed in a variety of industries, including process and petro-chemical industries, manufacturing, power generation and the automotive and aerospace sectors. Recently there has been a surge in demand for control engineers in the field of biomedicine. More generally feedback control and systems engineering skills play an important part, in an ever-widening range of high-tech applications.

The MSc can also be used a springboard for postgraduate research.

ENTRY REQUIREMENTS AND PREREQUISITES:
We require a good Upper Second-Class Honours degree or international equivalent in an electrical and electronic engineering discipline. Candidates from other engineering and scientific disciplines are encouraged to apply, provided they can demonstrate strength in mathematics and other suitable subjects such as dynamics, signals and systems or classical control.

IELTS at least 7.0 overall with no subtest below 6.5

This course is accredited by the Institution of Engineering and Technology on behalf of the Engineering Council as meeting the requirements for Further Learning for registration as a Chartered Engineer.

MSC COMMUNICATIONS AND SIGNAL PROCESSING

Read more about this course

This course has an extended research option: MSc Communications and Signal Processing with Extended Research

This course delivers a thorough, methodical and wide-ranging education in communications, signal processing, and microwave engineering. It covers in-depth materials including digital communication, wireless communications, mobile networks, digital signal processing, communication networks, and optical communications. In addition, students can choose between course units that specialise in signal and image processing, or antennas and microwave systems engineering.

The course is aimed at those with prior undergraduate level knowledge on communication and signal processing, wishing to enhance their skills to an advanced level for a rewarding career in related industries. Graduates are also capable to conduct PhD study in world leading research groups and contribute new ideas towards the advancement of technologies.

GRADUATE CAREERS

This course could lead you to a career in one of the following categories:

B BUILDING SUSTAINABLE FUTURES CAREERS
C LEADING CHANGE CAREERS
D INNOVATING TECHNOLOGY CAREERS
E RESEARCH FOR NEW HORIZONS

WHAT DO OUR GRADUATES DO?

On graduating you will be able to enter directly all areas of the modern communication and signal processing engineering industry, including the fast growing mobile and wireless technology sectors. You will also be prepared to begin PhD research courses, which may lead to careers in research establishments and universities.

COURSES IN RELATED SUBJECT AREAS:

Electrical and Electronic Engineering

ENTRY REQUIREMENTS AND PREREQUISITES:

We require an Upper Second-Class Honours degree or international equivalent in an electronic and electrical engineering discipline. This is a competitive application process and preference will be given to applicants with grades above our minimum entry requirements.

Applicants should have previously studied communication and signal processing engineering fundamentals, and have good programming skills (i.e., C++, Java, MATLAB).

IELTS at least 7.0 overall with no subtest below 6.5

This course is accredited by the Institution of Engineering and Technology on behalf of the Engineering Council as meeting the requirements for Further Learning for registration as a Chartered Engineer.

MSC ELECTRICAL POWER SYSTEMS ENGINEERING

Read more about this course

This course has an advanced option: MSc Advanced Electrical Power Systems Engineering
This course is also offered as a blended learning option.

Power system engineering is about keeping things in balance. Not just the balance between generation and load or between production and consumption of reactive power. It is also about the balance between the cost of energy and its environmental impact or the balance between the reliability of the supply and the investments needed to develop the system. This course will teach you how to quantify both sides of these equations and then how to improve the balances through technological advances and the implementation of sophisticated computing techniques. Our Electrical Power Systems Engineering students will experience facilities and spaces – some social, some very technical – that will let them work collaboratively and spark innovation. Currently, we host the largest high-voltage research lab in the UK.

Aims of this course are to:

- provide an advanced education in electrical power engineering.
- give graduates the education, the knowledge and the skills they need to make sound decisions in a rapidly changing electricity supply industry.
- give a sound understanding of the principles and techniques of electrical power engineering.
- give a broad knowledge of the issues and problems faced by electrical power engineers.
- give a solid working knowledge of the techniques used to solve these problems.

GRADUATE CAREERS

This course could lead you to a career in one of the following categories:

A ENERGY CAREERS
B BUILDING SUSTAINABLE FUTURES CAREERS
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E RESEARCH FOR NEW HORIZONS

"I discovered and explored my research interest with first-hand experience in focusing on the subject area, which developed my research and technical skills, as well as improved my academic writing skills."

Arif Adam Bin Mohd Nor
MSc Electrical Power Systems Engineering graduate
Now PhD Electrical and Electronic Engineering
at The University of Manchester

COURSES IN RELATED SUBJECT AREAS:

Electrical and Electronic Engineering
MSc Advanced Electrical Power Systems Engineering
Distance Learning: Electrical Power Systems Engineering

WHERE DO OUR GRADUATES WORK?

- National Grid
- Siemens
- State Grid Corporation of China
- SSE plc
- GE Energy
- GE Power Conversion
- ABB
- Pragmatic Consulting Ltd

WHAT DO OUR GRADUATES DO?

- Electrical Engineer
- Senior Electrical Engineer
- Power System Engineer
- Consultant
- Research Associate
- Design Engineer
- Researcher

After graduation, our students have gone on to work for electric utilities, equipment manufacturers, specialised software houses, universities and consultancy companies.

ENTRY REQUIREMENTS AND PREREQUISITES:

We require an Upper Second-Class Honours degree or international equivalent in an electronic and electrical engineering discipline.

IELTS at least 7.0 overall with no subtest below 6.5

MSC RENEWABLE ENERGY AND CLEAN TECHNOLOGY

Read more about this course

This course has an extended research option:
MSc Renewable Energy and Clean Technology with Extended Research

This course is jointly run with the Department of Mechanical, Aerospace and Civil Engineering

Prepare for the changing world, with a detailed understanding of the key renewable energy generation technologies and the factors which influence their exploitation. Known as 'REaCT', this course is specially designed to help you make a difference. On this course, you will gain an understanding of the foundations necessary to understand the principles of solar, wind, and marine energy technologies. You will also tackle the efficient distribution of renewables, their integration to usage into zero-carbon built infrastructure, and determine the economic and climate issues affecting the choice of renewable.

In completing this multidisciplinary course, you will become highly employable in an area of technology that will be of dominant importance in this century.

GRADUATE CAREERS

This course could lead you to a career in one of the following categories:

A ENERGY CAREERS **B BUILDING SUSTAINABLE FUTURES CAREERS**
C LEADING CHANGE CAREERS **D INNOVATING TECHNOLOGY CAREERS**
E RESEARCH FOR NEW HORIZONS

WHERE DO OUR GRADUATES WORK?

- Mott Macdonald
- Siemens
- UK Power Networks Services
- Pittas - Dragnis Ltd
- NCUK
- AMP
- AECOM
- Arup
- Ministry of Trade and Industry
- Bluebird Solar Private Ltd

"I chose University of Manchester to kick-start my career mostly because it is and continues to be one of the most admired and influential universities for MSc Renewable Energy, within the UK. This historical British institution offers great support and plays a dynamic role in shaping students, which represented an incredible opportunity. It is also known that The University of Manchester values its students and offers abundant growth opportunities and benefits for a promising future career in the UK."

Yara Bekdache
MSc Renewable Energy and Clean Technology

COURSES IN RELATED SUBJECT AREAS:

Electrical and Electronic Engineering, Mechanical Engineering, MSc Geoscience for Sustainable Energy; MSc Pollution & Environmental Control

WHAT DO OUR GRADUATES DO?

- Electrical Engineer
- Graduate Engineer
- Project Engineer
- Planning Engineer
- Technical translator
- R&D Engineer
- Director
- Project Manager
- Assistant Proposals Manager
- Researcher

UNITED NATIONS SUSTAINABILITY DEVELOPMENT GOALS:

The MSc in Renewable Energy and Clean Technology demonstrates Manchester's commitment to sustainability, echoed in our 2021 no.1 Times Higher Education Impact Ranking. Our 2021/22 SDG report specifically highlights the contribution of REaCT to achieving this ranking: 'Among our master's courses we offer Renewable Energy and Clean Technology, which equips students with a detailed understanding of solar, wind and marine energy generation technologies and the factors which influence their integration into zero-carbon-built infrastructures and into a sustainable electricity grid.'

The course content focuses on renewable energy technologies, on the economic and climate issues affecting the choice of renewable, and on the efficient distribution of renewables and their integration into usage in zero carbon-built infrastructure and for sustainable and clean electricity grids.

ENTRY REQUIREMENTS AND PREREQUISITES:

We require a good Upper Second-Class Honours degree or international equivalent in any of the following: electrical and electronic engineering, mechanical engineering, engineering, physics, or equivalent scientific discipline which includes a significant mathematical and engineering content.

IELTS at least 7.0 overall with no subtest below 6.5

This course is accredited by the Institution of Engineering and Technology (IET)

MSC ROBOTICS

Read more about this course

This course has an extended research option: MSc Robotics with Extended Research
This course is jointly run with the Department of Computer Science and the Department of Mechanical Engineering, Aerospace and Civil Engineering

Both the birthplace to the modern computer and the first English university to offer an engineering degree, Manchester has always been a changemaker. Now, one of the leading institutions in the field of Robotics, there truly is no better place to specialise in this rapidly developing technology.

From artificial intelligence and cognitive robotics to sensory feedback, this truly interdisplinary course not only introduces you to fundamental research but its applications. Encompassing nuclear, offshore wind, both health and social care, our portfolio marries far-ranging scope together with significant industry collaborations.

The four strategic themes explored in this course include: a) mechatronics and control; verification, security and trust in autonomous systems; b) human-robot interaction and cognitive robotics; c) artificial intelligence, machine learning and data science; d) ethics and human-centred robotics issues.

A unique opportunity to blend fundamental aspects with robot system design and integration, this course is practically oriented with an emphasis on real-world applications of robotics in various real-life scenarios.

Re. the extended research course: Prior to your summer break a preliminary study and outline of your MSc dissertation project is completed, which is fully developed throughout the second year of your course. The year-long enhanced individual research provides great opportunities to develop advanced research skills and to explore in depth some of the topics discussed during the course. This includes training in research methods, and advanced simulation and experimental techniques in robotics, as well as academic publications.

GRADUATE CAREERS

This course could lead you to a career in one of the following categories:

A ENERGY CAREERS **B BUILDING SUSTAINABLE FUTURES CAREERS**
C LEADING CHANGE CAREERS **D INNOVATING TECHNOLOGY CAREERS**
E RESEARCH FOR NEW HORIZONS

WHERE COULD OUR GRADUATES WORK?

- Dyson
- Airbus
- Ocado
- Saab
- GE Aviation
- Atkins
- Labman Automation
- Street Drone
- Createc
- Jacobs
- Sellafield
- National Nuclear Laboratory
- Ross Robotics
- Oxbotica

COURSES IN RELATED SUBJECT AREAS:

EEE Masters Degrees MSc ACSE
CS Masters Degrees MSc Artificial Intelligence
MACE Masters Degrees MSc Aerospace Engineering

WHAT COULD OUR GRADUATES DO?

Graduates from the course will be employed in a variety of industries, from start-ups and supply chain companies through to end users. The adoption of robotics is expanding significantly in areas such as nuclear, offshore-wind, transport infrastructure (rail, highways), logistics, automotive (driverless cars), construction, social-care, manufacturing, healthcare (surgery) and agriculture.

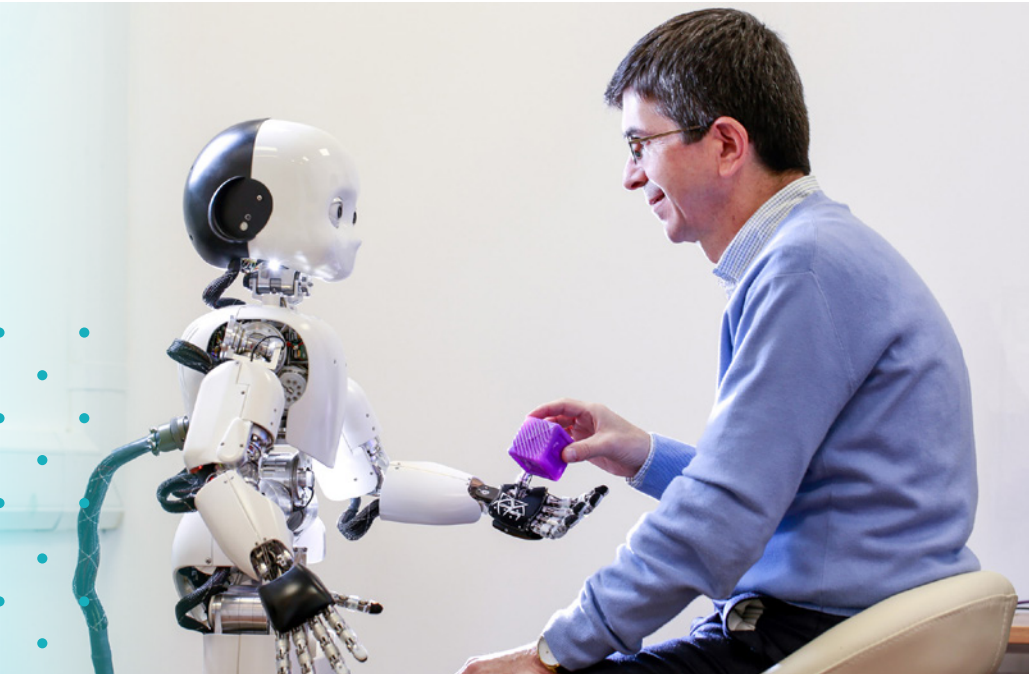
The MSc can also be used a springboard for postgraduate research. There are still many fields within robotics which require significant research to develop further.

ENTRY REQUIREMENTS AND PREREQUISITES:

We require a good Upper Second Class Honours degree or international equivalent in an electrical and electronic engineering, mechanical engineering, computer science or other related discipline. Candidates from other scientific disciplines are encouraged to apply, provided they can demonstrate strength in mathematics.

Re. extended research course: To progress to the second year of this course, we usually require performance at Distinction level. Students who do not meet the criteria for progression to the second year will instead graduate with the one-year Robotics MSc or an alternative appropriate qualification.

IELTS at least 7.0 overall with no subtest below 6.5



PRACTICALITIES - FEES, FUNDING, AND SCHOLARSHIPS

Your master's fees will cover the cost of your study at the University as well as charges for registration, tuition, supervision, examinations, and graduation. Tuition fees also entitle you to membership of our libraries, the Students' Union, and the Athletic Union.

If you require funding for your master's course, it is advised that you begin looking as soon as possible. A range of funding options may be available to you, which will differ depending on whether you are a student from the UK or an international student (including the EU).

Check the tuition fees for your chosen course, your fee status, and funding opportunities by visiting our master's fees and funding webpage.


FACVLTY OF ARTS

ACCOMMODATION

For most of you, Manchester won't just be your next stage of education; it'll be your new home for a year or more. From the moment you arrive, you'll be able to access support to help you make the most of your time in university accommodation. You'll find a range of accommodation options for postgraduate students, from contemporary and traditional halls of residence to a specialist advice service for those interested in private letting.

An offer of residence in university accommodation is guaranteed to all overseas postgraduate students for the duration of their studies, provided they meet conditions related to offer holder status and study mode. If your application falls outside the conditions of the guarantee, you are still welcome to apply for university accommodation.

Find out more on the accommodation website or explore our interactive map.

This brochure was created in 2022/2023. It has therefore been created in advance of course starting dates and for this reason, course information may be amended prior to you applying for a place. There are a number of reasons why changes to course information and/or published term dates may need to be made prior to you applying for a place – more details can be found on our website. Prospective students are therefore reminded that they are responsible for ensuring, prior to applying to study, that they review up-to-date course information by searching for the relevant course at: manchester.ac.uk/study/masters/courses/

Further information describing the teaching, examination, assessment, and other educational services offered by The University of Manchester is available at: manchester.ac.uk/study/masters/

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