MANCHESTER 1824

The University of Manchester

PHYSICS AND ASTRONOMY

POSTGRADUATE COURSES

SHAPE YOUR FUTURE

Learn today, lead tomorrow

CONTENTS

SHAPE YOUR FUTURE: CAREERS

Our Department is ranked joint 1st in the UK for the quality of our research.
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 13: Climate action

FACILITIES AND RESOURCES

DEPARTMENT OF PHYSICS AND ASTRONOMY

The Department of Physics and Astronomy is based in the Schuster Building and the Alan Turing Building. The outstanding facilities available to staff, students, and researchers in the department enable us to continue the pioneering work for which we are ranked joint 1st in the UK for research (Research Excellence Framework 2021).

We have access to equipment across various centres and institutes, and our physicists take part in major international research collaborations using facilities such as the Hubble Space Telescope, European VLBI Network, ISIS Neutron Facility, Advanced Photon Source (APS), 88-inch Cyclotron at the Lawrence-Berkeley Laboratory, and CERN to name but a few.

Our department boasts world-class facilities, including the Jodrell Bank Observatory the astronomical research centre of the University. The Department has an outstanding historical record of achievements, from Ernest Rutherford and the detection of the atomic nucleus to the recent discovery of graphene. Furthermore, The Department of Physics and Astronomy works alongside and has a strong presence in several centres and institutes, aiding research and facilitating new discovery.

Get a closer look at our facilities online.

MSC BY RESEARCH IN NUCLEAR PHYSICS

Read more about this course

Nuclear physics aims to understand the structure and dynamics of nuclear systems, exploring everything from how the universe is evolving and how stars develop to how the basic constituents of matter interact.

You will join one of the highest ranked physics departments in the world, with the historic Jodrell Bank Observatory among our many facilities. Our international reputation for teaching excellence and outstanding research is not only reflected in our history, with 13 Nobel Prize winners associated with the department, but is also matched by our commitment to innovation and new discovery.

The Manchester group collaborates with researchers across the world at international facilities, such as CERN and Argonne National Laboratory. Our postgraduate MSc and PhD projects offer you the opportunity to work at the frontier of the field, providing training in state-of-the-art experimental techniques of transfer reactions, gamma-ray spectroscopy, and measurements of hyperfine atomic effects using lasers.

THIS COURSE COULD LEAD YOU TO A CAREER IN ONE OF THE FOLLOWING CATEGORIES:

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

WHERE DO OUR GRADUATES WORK?

- Jordan Atomic Energy Commission
- Biomarker (BMKGENE) Europe
- Max Planck Institute for Plasma Physics
- Rolls-Royce
- CRA Corporate Risk Associates

"A career in research and an in-depth understanding of Astronomy & Astrophysics is something I'd always longed for, and UoM was just perfect in getting me started towards them. The University of Manchester is a well-recognized international university, offering world-class facilities, resources, and experienced faculties. It, therefore, was instrumental in not just laying a foundation for my understanding of the field but also opened vast prospects to pursue a career within the domain. Since graduation, I've enrolled as a Ph.D. student in Radio Astronomy at the University of Curtin, Perth, Australia."

Aishwarya Selvaraj
MSc-R Astronomy and Astrophysics graduate

COURSES IN RELATED SUBJECT AREAS:

MSc Nuclear Science and Technology; MSc Renewable Energy and Clean Technology

WHAT DO OUR GRADUATES DO?

- Research
- Business Development
- Healthcare Services
- Program and Project Management
- Consulting

UNITED NATIONS SUSTAINABILITY DEVELOPMENT GOALS:

The University's priority of communicating major issues associated with nuclear power, including safety, sustainability, decommissioning and waste management has been recognised by Times Higher Education, earning the University a no.1 ranking.

ENTRY REQUIREMENTS AND PREREQUISITES:

The standard academic entry requirement for a Master's research course will be a Lower Second UK honours degree, or international equivalent, in a relevant science or engineering discipline.

IELTS: At least 6.5 overall with no subtest below 5.5

MSC NUCLEAR SCIENCE AND TECHNOLOGY

Read more about this course

This course is jointly run with the Nuclear Technology Education Consortium (NTEC)

Acquire a specialised skillset designed for the needs of the nuclear industry with our MSc Nuclear Science and Technology course. You will be equipped with the knowledge needed to operate and decommission existing reactors as well as build new reactors.

The University of Manchester is a member of the Nuclear Technology Education Consortium (NTEC), a group of institutions that represent more than 90% of the nuclear postgraduate teaching expertise residing in the UK's universities and research institutes. You will graduate with a firm grounding in nuclear science and technology, as well as the skills required to thrive in a substantial, exciting industry.

CONTENT OVERLAP WITH OTHER RELATED UOM COURSES OR DISCIPLINE AREAS:

MSc by Research Nuclear Physics; MSc Renewable Energy and Clean Technology

THIS COURSE COULD LEAD YOU TO A CAREER IN ONE OF THE FOLLOWING CATEGORIES:

A ENERGY CAREERS

B BUILDING SUSTAINABLE FUTURES CAREERS

WHERE DO OUR GRADUATES WORK?

- Rolls-Royce Plc
- BAE Systems
- Cavendish Nuclear
- National Nuclear Laboratory
- Ministry of Defence

WHAT DO OUR GRADUATES DO?

- Safety Engineer
- Mechanical Engineer
- Nuclear Safety Consultant
- Senior Engineer
- Consultant

UNITED NATIONS SUSTAINABILITY DEVELOPMENT GOALS:

The University's priority of communicating major issues associated with nuclear power, including safety, sustainability, decommissioning and waste management has been recognised by Times Higher Education, earning the University a top 10 ranking. The course itself directly relates to these efforts: 'training is designed to meet the UK's projected nuclear skills requirements in decommissioning and clean-up, reactor technology, fusion and nuclear medicine'.

ENTRY REQUIREMENTS AND PREREQUISITES:

A Lower Second UK honours degree (or international equivalent) in a relevant science or engineering discipline. For applicants with some years' industrial experience, a lesser qualification may be acceptable.

IELTS: at least 7.0 overall with no sub-test below 6.5.

This course is accredited by IMechE, EI, IoM3 and IET

ACADEMICS AND THEIR RESEARCH

DR. GAVIN SMITH,
READER IN PHYSICS, NUCLEAR PHYSICS, DEPARTMENT OF PHYSICS AND ASTRONOMY,

Dr. Gavin Smith's research involves Nuclear Fission and fission-fragment spectroscopy with an emphasis on detector development for fission studies. Experimental pure and applied nuclear physics at CERN using the n_TOF neutron time-of-flight facility for neutron-induced reactions, and the ISS facility for transfer-induced fission.

Nuclear energy is a crucial component of a low-carbon energy mix. Nuclear data for fission is important for the design of the next generation of nuclear reactors, for the development of accident tolerant fuels and for decommissioning of current reactors.

"The staff are really approachable and really inspirational. I've had some great professional and personal interactions with some teaching staff that do amazing research, and that's helped me to work out what I want to do with my degree."

Erin Raif
MSc Physics graduate

DR. FRANCIS LIVENS,
PROFESSOR OF RADIOCHEMISTRY AND DIRECTOR OF THE DALTON NUCLEAR INSTITUTE

Actinide chemistry, particularly plutonium, in different contexts, including the evolution and behaviour of stored materials; behaviour in natural and engineered environments; and environmental and forensic analysis. As well as carrying out research in these areas, Dr Francis translate the results into national programmes, working with Government, regulators and industry.

Actinide elements are essential components of nuclear fuels, by-products of nuclear power, problematic components of nuclear wastes, and contaminants which cause environmental concern. They are thus inseparable from nuclear technology, which has a vital role to play in reaching Net Zero but, in order to demonstrate safety and secure stakeholder acceptance, we need to show we understand and can manage these materials.

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

PRACTICALITIES - 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.


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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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