

MANCHESTER  
1824

The University of Manchester



# Physics and Astronomy

UNDERGRADUATE BROCHURE



Amplify your understanding of the world at every possible scale: from the universe as a whole to the fundamental particles that are the building blocks of all matter, and from the moment of the Big Bang to the ultimate fate of the cosmos. Understanding physics means we can develop new and useful technologies such as solar cells, medical scanners and lasers.

Our history of excellence includes 11 Nobel laureates, such as Rutherford, Bohr, Bragg, and Blackett.

Most recently, Professors Sir Andre Geim and Sir Konstantin Novoselov were awarded the prestigious honour in 2010 for their pioneering discovery of graphene. Today, we are a large and dynamic department with over 90 lecturers and professors, ranked joint 1st in the UK for our world-leading research impact, working at the frontiers of their fields and whose expertise spans the full range of physics disciplines.





## Why Manchester



We're ranked joint 1st in the UK for our world-leading physics research (UK Research Excellence Framework 2021).



Our department is home to Jodrell Bank Observatory, renowned centre for radio astronomy and home of the famous Lovell Telescope.



Our facilities include the £10 million Schuster Annexe, opened in 2017 and home to a state-of-the-art physics teaching lab.



All of our courses are accredited by the Institute of Physics.



We're one of the UK's largest departments of Physics and Astronomy, with top ratings for teaching and research, and 13 Nobel Prize winners, past and current.

Read more about why Manchester should be your first choice: [uom.link/ug-physics-why-mcr](https://uom.link/ug-physics-why-mcr)

## Our courses

Choosing a Manchester physics degree means following in the footsteps of some of Britain's greatest physicists.

Whether your interests lie in astronomy, theoretical physics or mathematics, there's a course for you. You'll study in outstanding facilities graced by the brightest minds.

Physics BSc

Physics MPhys

Physics with Astrophysics BSc

Physics with Astrophysics MPhys

Physics with Study in Europe MPhys

Physics with Theoretical Physics BSc

Physics with Theoretical Physics MPhys

Mathematics and Physics BSc

Mathematics and Physics MMath&Phys

Physics with an Integrated Foundation Year

### FLEXIBLE OPTIONS

Undergraduate teaching is modular, with core course units shared by the different courses. This means that it is often possible to change between courses up to the end of your first year, and (grades permitting) transfer to the MPhys version of your course.

### FOUNDATION YEAR AVAILABLE

You can prepare for the full degree course if you do not have the appropriate qualifications for direct entry by undertaking our foundation course first.

Find out more about the different courses and options on offer on our department website:  
[uom.link/ug-physics](http://uom.link/ug-physics)







## What you'll learn

In Years 1 and 2, the course provides a foundation in classical physics, including dynamics, waves, electromagnetism and thermodynamics. At the same time newer concepts are introduced, including the unification of space and time, the meaning of wave-particle duality and the relation between entropy and disorder.

You'll complete course units in special relativity, quantum mechanics and statistical mechanics. You'll also develop your programming skills studying Python and other platforms, depending on your choice of course units.

These modern concepts and the techniques of classical physics lay the foundation for study in Years 3 and 4, during which you'll choose from a wide range of options to develop your expertise in diverse topics that include: atomic and molecular structure, solid state electronic devices, electromagnetic radiation, lasers, stars and cosmology, particle and nuclear physics, and the more advanced aspects of theoretical physics.

Moreover, in learning how to be a physicist, you'll be taught a set of highly valued skills:

- rigorous and robust evidence-based reasoning;
- how to analyse and assess data and drawing meaning from it;
- a high degree of numeracy and mathematical ability;
- and communication and team-working skills.

# Special features

## STUDY ABROAD

Students on our four-year degree courses have the opportunity to study the third-year of their course at one of several universities abroad. The University has exchange partners across the world and students build up valuable experience at these universities. There are a wide range of partner universities in many different countries with Canada, USA and Singapore being popular destinations. There is no need to specify this option on your UCAS application form as applications are made once you are here. Availability of places is competitive, and decisions are normally made during the second year of study.

Read more about Study abroad: [uom.link/ug-physics-study](https://uom.link/ug-physics-study)

## FACILITIES

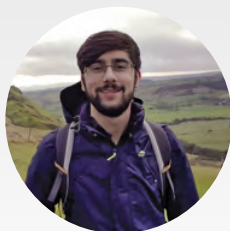
Our facilities are second to none and provide students with the very best opportunities:

- Small-group teaching: in the first year, students have both physics and maths tutorials to support their lectures
- Jodrell Bank Observatory
- Rooftop optical and radio telescopes
- Our own physics library with out-of-hours access for 3rd and 4th year students
- Dedicated quiet areas for physics students to study all year round.

## STUDENT SUPPORT

We pride ourselves on the amount of support we offer students, from our dedicated well-being hub to our award-winning PASS (Peer Assisted Student Study) scheme. PASS allows you to utilise the experience and expertise of higher year volunteer students (PASS Leaders). You'll be assigned a dedicated academic advisor who can help you with academic issues and guide you through your transition from school or college to university.

Read more about our student support scheme here: [uom.link/ug-physics-support](https://uom.link/ug-physics-support)



*"The staff are really approachable and 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 / MPhys Physics**

Read more about Erin's experience at Manchester: [uom.link/ug-physics-erin](https://uom.link/ug-physics-erin)

## OUR STUDENT COMMUNITY

You can boost your career prospects and enhance your student experience through any of the different extracurricular opportunities available at the University, including societies (Nuclear & Particle Physics Society, Astrobiology, PhysSoc), volunteering and work placements.

[uom.link/ug-physics-student-union](https://uom.link/ug-physics-student-union)

Our University of Manchester Physics Outreach (UMPO) is a student organised science communication project that aims to engage the general public in various outreach activities. They visit schools to deliver workshops and run demonstrations in public spaces spreading the word of science!

Follow UMPO on Twitter to find out more:

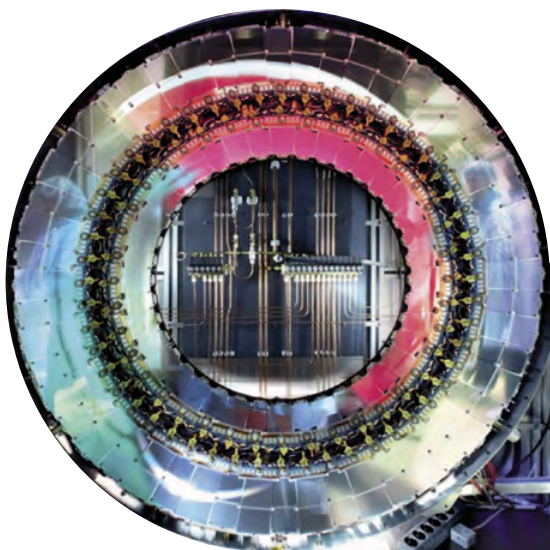
[uom.link/ug-physics-umpo](https://uom.link/ug-physics-umpo)

## Open days

The University holds undergraduate open days regularly where you have the opportunity to find out more about our courses, the support we offer and see our facilities. Attending an open day is a great way to find out what studying at Manchester is like and to hear from our staff and students.

For information about our open days visit:

[uom.link/ug-physics-open-days](https://uom.link/ug-physics-open-days)



*"The one thing that made Manchester really stand out to me was how modern and innovative the Department of Physics and Astronomy was. Not only are they at the forefront of new discoveries, such as graphene, but also, they are always trying to improve facilities, with the recently built Schuster Annexe providing even more study spaces."*

Amy Smith / MPhys Physics

# Employability and careers

You'll receive training that will prepare you for a broad range of careers, not just in physics but in other areas that need the in-demand skills you will learn. Common destinations for our graduates include working for tech companies or in finance, or taking their physics to the next level with further study.

## WHAT OUR GRADUATES DO

- Scientist/Engineer for Tech company
- Finance/Banking/Management
- Information Technology
- Research scientist
- Medical Physics
- Scientific Publishing
- Data scientist

## WHERE OUR GRADUATES WORK

- BAE Systems
- RAF
- Meteorological Office
- NHS
- Bank of England
- Deutsche Bank
- Merrill Lynch

Discover the careers opportunities the University and our department offer, so that you graduate with a range of skills and experience: [uom.link/ug-physics-careers](https://uom.link/ug-physics-careers)

The University of Manchester is the most targeted universities in the UK by employers (The Graduate Market in 2022). [uom.link/ug-physics-highfliers](https://uom.link/ug-physics-highfliers)

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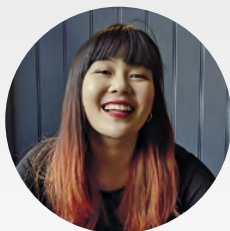
## DISCLAIMER

This brochure was produced in 2022 It has therefore been produced in advance of course starting dates. For this reason, course information, including course content, may be amended prior to your applying for a place on a course of study. There are a number of reasons why changes to course information and/or published term dates may need to be made prior to your applying for a place on a course. These may include, but are not limited to: the need to make reasonable changes to the content and teaching offered in relation to any course for operational and/or academic reasons; the withdrawal of courses due to insufficient numbers; a course not receiving the required accreditation; and/or interruption or loss of key services due to circumstances beyond our control, including fire, flood or other operational issues. Prospective students are therefore reminded that they are responsible for ensuring, prior to applying to study at The University of Manchester, that they review up-to-date information by searching for the relevant course at [uom.link/fse-ug-courses](https://uom.link/fse-ug-courses)

## STUDY ABROAD DISCLAIMER

Some aspects of the study abroad programme may continue to be impacted by the COVID-19 pandemic. The situation is fast-moving and dynamic and may require adjustments at short notice.

Royal Charter RC000797



*"If you're interested in technology there are many types of jobs – data science, tech architecture, DevOps, cloud computing etc. If you enjoy being hands on, learning things and see the products of your labour (something you don't always get with physics), I'd encourage you to look around."*

Wei Ann Heng / MPhys Physics alumni  
Software Engineer at Accenture

Read more about Wei Ann's experience after graduation:  
[uom.link/ug-physics-weiann](https://uom.link/ug-physics-weiann)