CARDIFF UNIVERSITY
PRIFYSGOL CAERDYDD

Physics and Astronomy

Undergraduate
degree programmes

cardiff.ac.uk/physics-astronomy

1st

for academic support and

2nd

for teaching on my course for physics in the Russell Group of universities

Source: National Student Survey (NSS) 2025

Our strengths can become your strengths

Together we can advance our understanding of the Universe.

Physics seeks to explain the forces that shape our world and the Universe, and is the fundamental science at the heart of all technology – from the smallest nanoscale devices to the telescopes exploring the far reaches of space.

Here at Cardiff, you'll study in a top 10 school of physics, where our high-quality National Student survey (NSS) feedback routinely places us in the top 5 for teaching physics in the UK.

Cardiff is a European leader in compound semiconductor research: we work with industry colleagues in our multi-million-pound Translational Research Hub supporting careers using this cutting-edge technology in fields as diverse as telecommunications, power generation and medical diagnosis.

Our researchers played a pivotal role in the 2015 detection of gravitational waves and are developing key technologies for future detectors. Home to one of the largest astronomy departments in the UK, we build crucial parts for space telescopes Space Agency to study stars forming in our galaxy and beyond, using images from the James Webb Space Telescope (JWST) and others to reveal vital discoveries about the universe.

We work with nanoscale devices at extremely low temperatures; exploiting the magnetic and quantum properties of materials at these tiny scales through the application of the latest advances in high-performance computing, data science, and machine learning.

Through our work at CUBRIC (Cardiff University Brain Research Imaging Centre), you'll have a unique opportunity to explore the world of digital imaging and medical physics, using computational techniques to measure processes in the brain.

Not only will you discover exciting science at its cutting-edge, but you'll also be part of a friendly, inclusive community where we'll do our very best to help you develop the skills for success in your future career.

Athena SWAN Silver Award

"I believe together we can make a difference. From astronomy to medical physics to the smallest of things physics definitely can change the world."

Kavetha, Physics (MPhys)

Kavetha is going on to a graduate scientist programme at the National Physical Laboratory.

Find out more

A launchpad for your future career

As a physics graduate, the sky is really not the limit – the possibilities are endless.

A physics degree equips you with highly sought-after problem-solving skills vital for areas from scientific research to data science, IT, finance, business and education.

Our students have gone on to work for organisations as diverse as the Royal Airforce, Hawk-Eye, the NHS, European Space Agency, Sony, EDF, GCHQ, KPMG and BAE Systems.

After her BSc Physics, Lucy went on to work for Hawk-Eye Innovations, which develops live sports arena technologies.

Amie works as a Clinical Scientist in the NHS following her BSc Physics with Medical Physics.

Nathan joined the Royal Airforce after graduating with an MPhys Physics with Astronomy.

My role revolves around redefining the company's machine learning capability by constructing a cutting-edge machine learning platform on cloud infrastructure. I am immensely grateful for the transformative experience I had at Cardiff University. The combination of exceptional academics, a supportive community, and a strong emphasis on practical application has prepared me for the challenges and opportunities I encounter in my professional life."

Cellan, BSc Physics with Astronomy
Data Scientist at Hargreaves Lansdown

Facilities

We're based in the multi-million pound Queen's Buildings complex, just a few minutes' walk from Cardiff city centre, the Centre for Student Life and the 130 acres of Bute Park.

Our learning spaces and teaching labs are at the heart of our school. Here, you'll become part of our friendly and inclusive community, investigating the workings of the universe on the smallest and largest scales.

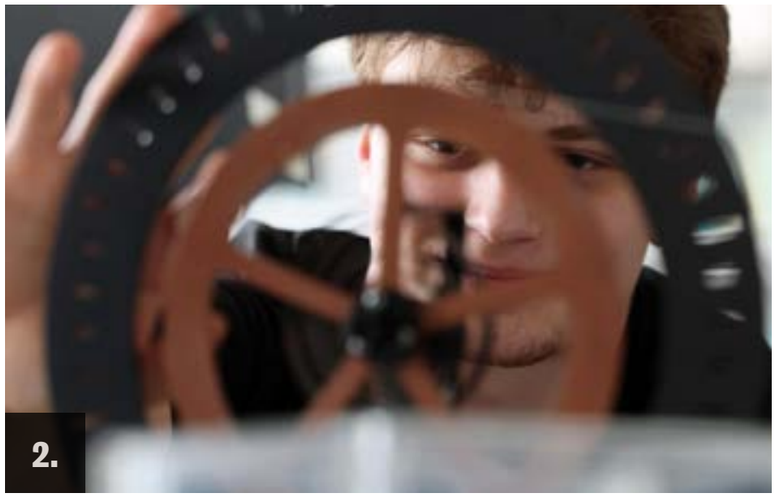
Many of our research labs including our gravitational waves lab and Cardiff Diamond Foundry are on site, while our high-end brain imaging facilities are located at the Cardiff University Brain Research Imaging Centre (CUBRIC), and compound semiconductor cleanrooms at the Institute for Compound Semiconductors at our Translational Research Hub. Your final year project may lead you to carry out real-life research in one of these pioneering spaces.

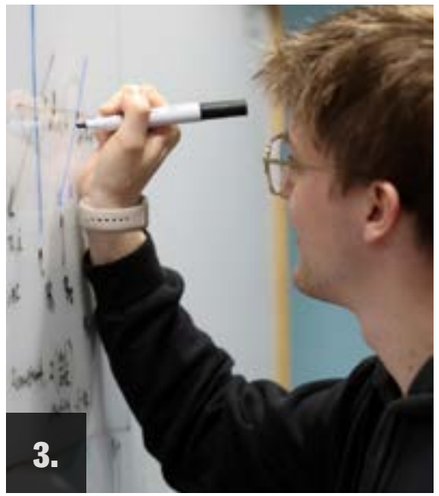
As a physics student, you'll share some study spaces, a restaurant and library with your engineering counterparts.

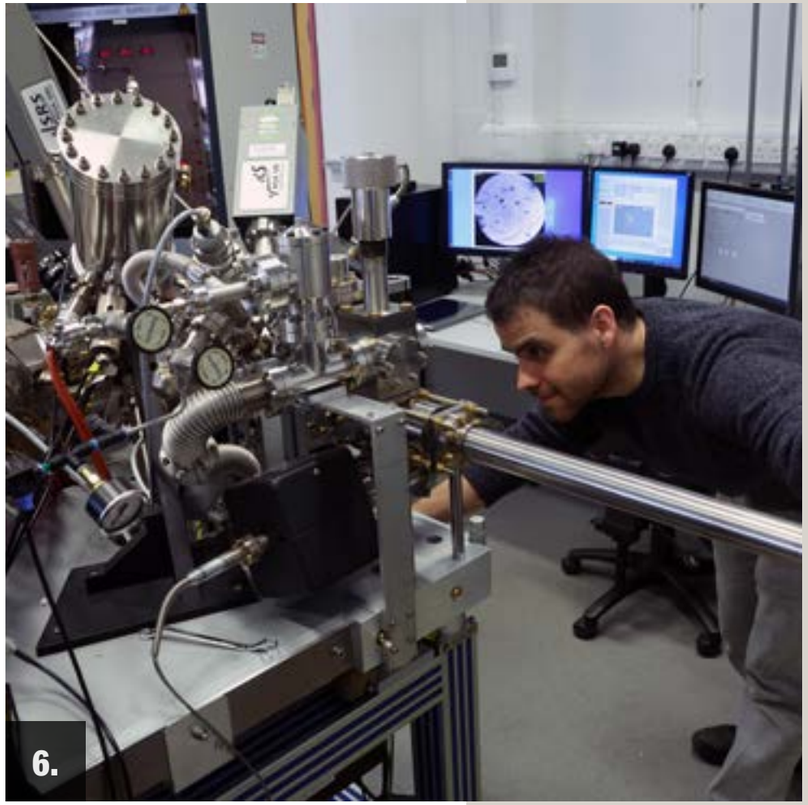
Cardiff University Students' Union was rated 2nd in the UK by 2024 WhatUni Student Choice Awards for Best Students' Union.

What can you expect from labs at university?

MPhys student Morgan talks about how labs compare to those at A level.







1.
We have dedicated labs for each year group.

2.
In your first year you can expect to spend 6-8 hours a week in lab sessions.

3.
This study area is equipped with multiple screens and mobile whiteboards used for seminars and problem-solving in small group sessions.

4.
Our physics students often study in our dedicated physics and engineering library.

5.
Our on-site Trevithick restaurant is shared with engineering students.

6.
Our low energy electron microscopy facility combines an impressive microscope with an epitaxy reactor. Here, the team can investigate how atoms come together to form the compound semiconductor crystals used in electronics and technologies from mobile phones to solar panels.

7.
This state-of-the-art cleanroom is based at the Institute for Compound Semiconductors, where our researchers work with industry partners in fields as diverse as telecommunications, power generation and medical diagnosis.

Your student experience

1st

for astronomy in the Russell Group for academic support and **2nd** for teaching on my course.*

for physics in the Russell Group for teaching on my course, learning opportunities, assessment and feedback, academic support; and **2nd** for student voice.*

*2024 National Student Survey

Our consistently high NSS (National Student Survey) scores show that teaching and student experience are our top priorities.

Our open door policy means you can see or email your lecturers and other staff directly for support. We strive to provide a friendly and welcoming environment promoting equity, diversity and inclusion for all. We're proud to be the first Welsh university to be awarded Institute of Physics (IOP) Juno Champion status for our efforts in this area, and delighted to be one of the 10 UK universities invited to pilot the IOP's new Inclusion Award.

And, with one of our research groups investigating innovation in teaching, we're always looking at ways we can optimise your learning experience.

Our dynamic student society **Chaos** runs loads of social events including the annual **Chaos Ball**, and has close links with the Institute of Physics.

"Looking back on when I started my degree, I can't believe how much progress I've been able to make both academically and personally, thanks to the supportive network of staff in the department. You're treated more like a colleague than a student. In particular, the weekly tutorials in first year are a great opportunity to get to know some of the lecturers, making you feel more settled."

Emily,
MPhys Astrophysics

Kickstart your career with a professional placement

Choose or add a professional placement year to your BSc or MPhys Physics degree and spend your third year working for an organisation, earning a salary.

Or, spend a summer on a placement in the UK or overseas on a real-life research project.

We'll help you find a placement that's perfect for you through our extensive network of industry and university links.

During her placement, Lily was offered a job as a process engineer on graduation.

"I spent my placement shadowing people and learning about the cleanroom and semiconductor factory. The first year of my job will be spent in different departments, getting to know how the company works.

I'm excited to start my career in an industry growing in Wales and at such a welcoming company."

Lily, BSc Physics
summer placement at KLA, a global semiconductor organisation, Newport

"The placement is going marvellously. It's such a wonderful and delightful community of scientists and researchers. I develop scientific training modules aimed at researchers, including biologists, who lack the understanding of physics required for subatomic particle experiments."

Aziza, BSc Physics with Astronomy with Professional Placement
at Rutherford Appleton Laboratory in Oxfordshire, a world-leading UK Research & Innovation (UKRI) research institution.

"I spent ten weeks on a project to improve gravitational waves detectors at the Laser Interferometer Gravitational-Wave Observatory (LIGO) at Louisiana State University. This was a really exciting project that taught me so many new physics skills. I helped the LIGO detector characterisation team locate a type of glitch known as koi fish glitch sources.

I would highly recommend a summer placement as the experience and knowledge gained is invaluable to anyone wanting a STEM career, and it's a great opportunity to network and make lifelong friends in the field."

Em.J, MPhys Astrophysics
summer placement at Louisiana State University

BSc or MPhys?

A BSc (Bachelor of Science) is a three-year degree that will provide you with a thorough grounding in undergraduate physics.

The four-year MPhys (Master of Physics) degree course is a great choice if you want to study physics in more depth, and at a more advanced level. If you choose one of our integrated MPhys courses, you'll do a further year of study which will be mostly research-focused and includes a major project with one of our research groups, meaning you'll contribute to real-life research. A four-year MPhys is an excellent springboard into further education or research-based roles.

Your first three years will be identical to the BSc course, but as this is an advanced degree, in your final year you will be able to specialise according to your interests and study selected topics in greater depth.

Our common first year means that you can start a BSc degree and switch to another of our physics courses within the first year, or to the four-year MPhys up until the end of your second year (subject to academic achievement). You can also add a professional placement year to your physics degree up to start of your second year.

IOP Institute of Physics

All of our undergraduate degree courses are accredited by the Institute of Physics (IOP).

Visit our undergraduate course page to **find out more**.

Physics

Physics BSc, UCAS code: **F300**
Physics MPhys, UCAS code: **F303**
Physics with a Professional Placement Year BSc, UCAS code: **F302**
Physics with a Professional Placement Year MPhys, UCAS code: **F304**

Physics explores the fundamental laws underpinning the Universe, from the subatomic level to entire galaxies.

During this course, you'll discover how theoretical and experimental physics describes the Universe and gain an insight into how it shapes modern technologies – from the tiniest semiconductor chip to the most powerful laser.

Join our **top 10 university*** and learn with researchers working on some of the most exciting discoveries of our time, whether that's the detection of gravitational waves or breakthroughs in quantum dot technology which will help scientists and engineers of the future optimise device efficiency from power generation to medical imaging.

You'll not only gain the problem-solving skills for a wide range of careers but become part of our inclusive, progressive physics and astronomy community.

Through your taught modules, you'll gain a solid foundation in physics and mathematics, exploring a wide range of topics from quantum mechanics and optics to atomic and nuclear physics.

As well as gaining the confidence to design and conduct your own lab experiments, you'll develop your programming skills using python. In your final year, you'll align with one of our research groups and carry out a project using real-world research data in a subject you're interested in.

**The Guardian University Guide 2025*

Professional placement

This course has a professional placement option.
See pages 12-13 for details.

"When I was finishing my A levels I liked both semiconductor and solid state physics, and also astrophysics! I wasn't really sure which I wanted to do long-term and I chose Cardiff University as it has a good reputation in all of them.

Cardiff's involved with LIGO and was part of the discovery of gravitational waves in 2015, and there's a really active condensed matter and photonics department, based in the Translational Research Hub."

Lille, MPhys Physics

Meet Lille

First-year students photograph the night sky for their astrophysics coursework at Cosmeston Lakes Country Park.

Astrophysics

Astrophysics BSc, UCAS code: **F511**
Astrophysics MPhys, UCAS code: **F510**
Astrophysics with a Professional Placement Year BSc, UCAS code: **F513**
Astrophysics with a Professional Placement Year MPhys, UCAS code: **F512**

As a future astrophysicist, you'll apply the principles of physics to astronomical phenomena, exploring the Universe and investigating how it works.

We're home to one of the largest astronomy groups in the UK and are proud to have led many new discoveries - from the detection of gravitational waves to the first images of black holes. This same team of academics will shape your learning, giving you an insight into the theoretical physics and mathematical concepts describing space, time, energy and matter, and how to apply these to the cosmos.

Gain core physics and mathematics skills combined with an understanding of observational astronomy and deep dive into the theory of astrophysics.

As well as gaining the confidence to design and conduct your own lab experiments, you'll develop your programming skills using python. In your final year, you'll align with one of our research groups and carry out a project using real-world research data in a subject you're interested in.

An ideal launchpad to become an astrophysicist, this course will also equip you for a career in a wide range of sectors – from data analysis and technology to finance and education.

Join our **top 10 university*** and become part of a welcoming, progressive physics and astronomy community.

**The Guardian University Guide 2025*

Professional placement

This course has a professional placement option.
See pages 12-13 for details.

Image of the Rosette Nebula, captured on our first-year Introduction to Astrophysics field trip (shown on the page opposite).

Physics with Medical Physics

Physics with Medical Physics BSc, UCAS code: **F350**

Using physics to diagnose and treat medical conditions is a rapidly expanding and exciting field of study, vitally important to supporting people's health.

This IOP accredited course is unique in its focus on practice rather than theory. Developed with the University Hospital of Wales (UHW), our medical physics modules are delivered by NHS professionals at UHW and Velindre Cancer Centre.

As well as a broad introduction to the many specialist areas of medical physics, you'll also gain a solid foundation in core physics.

In In the final year, you'll carry out a research project at UHW, Velindre Cancer Centre or the flagship Cardiff University Brain Research Imaging Centre (CUBRIC) in an exciting area such as Doppler ultrasound, nuclear medicine, radiotherapy, diagnostic radiology physics or physiological measurement.

Your project is directly supervised by NHS medical practitioners or our brain imaging researchers at the Cardiff University Brain Research Imaging Centre (CUBRIC).

You'll be able to apply for the NHS Scientist Training Programme (STP) after graduating, which is also delivered by your BSc lecturers.

Join us and you'll not only develop the highly sought-after skills valued inside and outside the medical physics sector, but become part of a welcoming, inclusive physics and astronomy community with a dynamic student society.

Our graduates in the NHS and research careers include:

- Director of Medical Physics and Clinical Engineering
- Heads of Non-Ionising and Ionising Radiation
- Head of Radiation Protection
- Clinical Scientists and Healthcare Scientist Practitioners
- Research Scientists.

"The vibrant community of Cardiff attracted me to Cardiff University. The Medical Physics course gives me an opportunity to go in either direction towards core physics or medical physics after graduation."

Riya, BSc Physics with Medical Physics

What's it like to work as a medical physicist?

A day in the life of clinical scientist **Amie Roberts** who works at University Hospital of Wales.

Applications

To be considered for entry onto any of the undergraduate courses we offer, you should apply through UCAS: **www.ucas.com**

Entry requirements

If you are taking or currently studying for A-levels, we normally require good grades in three subjects that should include Maths and Physics (but exclude General Studies and Critical Thinking). You'll need to demonstrate proficiency in science practicals where applicable.

Applicants must have full A-levels as AS-levels are not sufficient for entry onto BSc or MPhys programmes. A typical offer is AAB-BBB (BSc) and AAA-ABB (MPhys).

We normally require a pass at GCSE English language at grade C or above, or IELTS 6.5 (with 5.5 in each skill area).

For the International Baccalaureate, we require 34-43 points (BSc) and 32-36 points (MPhys) to include Physics and Maths at Higher Level.

Other qualifications

We welcome applications from those with other qualifications including Open University, International Baccalaureate and Welsh Baccalaureate; each application is assessed individually.

We will consider applications from those who were unable to study A-level Physics (or equivalent) but who have very good grades in Mathematics. If you would like to discuss your application before applying, please contact the admissions tutor or visit our course web pages at: **www.cardiff.ac.uk/courses** for further information.

International applicants

We welcome applications from international students. Your qualifications must be comparable to UK qualifications. Please contact the admissions tutor for details.

More information is also available on our website at: **www.cardiff.ac.uk/ international**

Alternative routes to entry

If you want to study physics with us, but don't have the required qualifications or subjects at A-level, you can apply for the Engineering with a Foundation Year programme (H101). Upon successfully completing the first year of this programme, you'll be accepted on to the physics course of your choice.

Visit our undergraduate course page to **find out more**.

How to find the School

The School of Physics and Astronomy is located in North Building, in the Queen's Buildings complex, just a short walk from Cathays Campus.

Key

- School of Physics and Astronomy
- University and NHS buildings
- Student residences

Important Legal Information

The contents of this brochure relate to the Entry 2027 admissions cycle and are correct at the time of going to press in April 2026. However, there is a lengthy period of time between printing this brochure and applications being made to, and processed by us, so please check our website at: **www.cardiff.ac.uk** before making an application in case there are any changes to the course you are interested in or to other facilities and services described here. Where there is a difference between the contents of this brochure and our website, the contents of the website take precedence and represent the basis on which we intend to deliver our services to you.

Your degree:
Students admitted to Cardiff University study for a Cardiff University degree.

This brochure is printed on paper obtained from well managed sources using vegetable-based inks. Both the paper used in the production of this prospectus and the manufacturing process are FSC® certified. The printers are also accredited to ISO14001, the internationally recognised environmental standard.

When you have finished with this brochure it can be recycled, but please consider passing on to a friend or leaving it in your careers library for others to use.

Thank you.

Mae'r ddogfen hon hefyd ar gael yn Gymraeg.

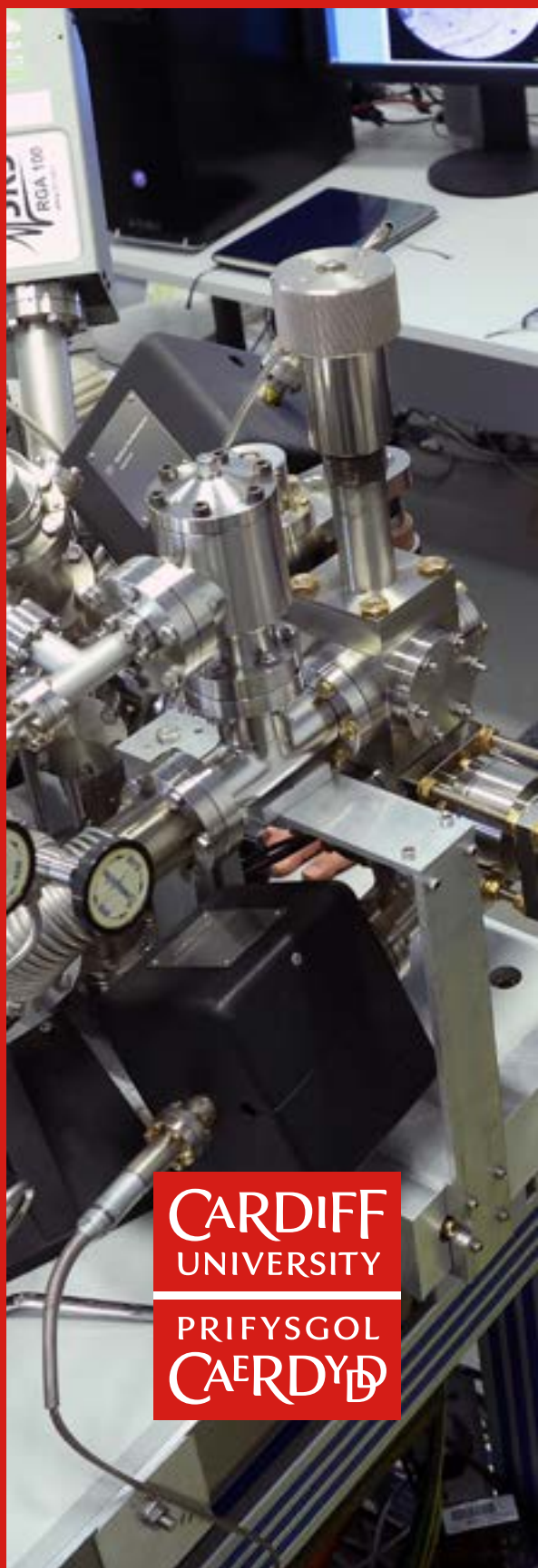
This document is also available in Welsh.

Cardiff University is a registered charity, no. 1136855

This prospectus can be made available in alternative formats, including large print (text), Braille and on audio tape/CD.

To request an alternative format please contact Laura Roberts:

Tel: **029 2087 4455**
Email: **RobertsL9@cardiff.ac.uk**



To find out more about the School of Physics and Astronomy

Email: **physics-admissions@cardiff.ac.uk**

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