



CARDIFF  
UNIVERSITY

PRIFYSGOL  
CAERDYDD

School of  
Physics and Astronomy  
**Undergraduate** Degree Programmes

[www.cardiff.ac.uk/physics-astronomy](http://www.cardiff.ac.uk/physics-astronomy)

# Welcome

Our graduates are equipped with the skills and knowledge needed for a wide range of **career paths**.

We have one of the **largest** UK communities of Astrophysics and Condensed Matter Physicists.

**99%** of our research was rated as “**internationally excellent**” and “**world-leading**”, ranking **6th** in the UK and **2nd** for impact.

Source:  
2014 Research Excellence Framework



We **champion advancing women's careers** in science and **promote gender equality** in Physics.

Athena SWAN Bronze Award and IOP Juno Champion Status

In the National Student Survey we are continually rated highly for **student satisfaction**, averaging over **90%** for the last six years.

Our Institute of Physics **accredited** degree programmes are supported by **cutting-edge research**; recent breakthroughs include discovering possible signs of life on Venus.

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# Choose Cardiff

These are exciting times in Cardiff.





Not only will you discover exciting science at its cutting-edge, but you will also be part of a friendly, approachable School, where staff will do their very best to help you develop the skills and abilities which will allow you to be successful in your future career.

We are proud to be involved in many projects representing the frontiers of physics research, with the UK-wide Research Excellence Framework (REF) ranking the School as 6th in the UK. We build and operate both small and large lasers and investigate the interface between physics and living systems.

We work with nano-scale devices, often at extremely low temperatures, exploiting the thermal, magnetic and quantum properties of materials on these tiny scales and we are applying the latest techniques in high-performance computing, and using a range of large-scale telescopes around the globe to observe interstellar activity. We are also at the centre of the UK Compound Semiconductor Cluster, which is continuing to attract significant funding, and provides placement and job opportunities for our students.

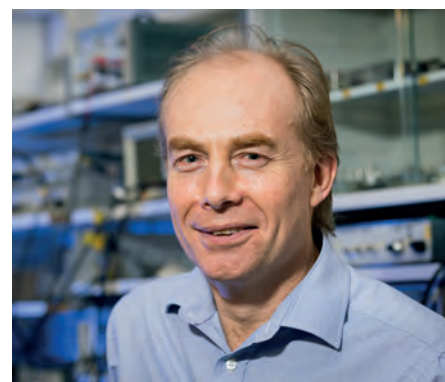
Our Astronomy group is continuing to hit the headlines with its ground-breaking research. You may be aware that we are part of the international research project that has found evidence for the existence of gravitational waves, a discovery that has confirmed Einstein's original theory. We have also made the incredibly exciting breakthrough to suggest signs of life in the clouds of Venus.

We carry out a wide range of research on many aspects of astronomy, from detailed analyses of stars forming in our galaxy and beyond, to the origin of structure in the Universe.

In your undergraduate research projects, you will have the opportunity to do some work in these exciting areas of Physics and Astronomy. You may eventually choose to pursue a career in scientific research, or use your valuable and highly sought-after skills in other vital areas of industry, education or any one of a wide range of professions. The possibilities for Physics graduates really are endless.

We aim to provide you with the skills to equip you for a rewarding and adaptable professional life, as well as giving you a real insight into the workings of the Universe on the largest and smallest scales.

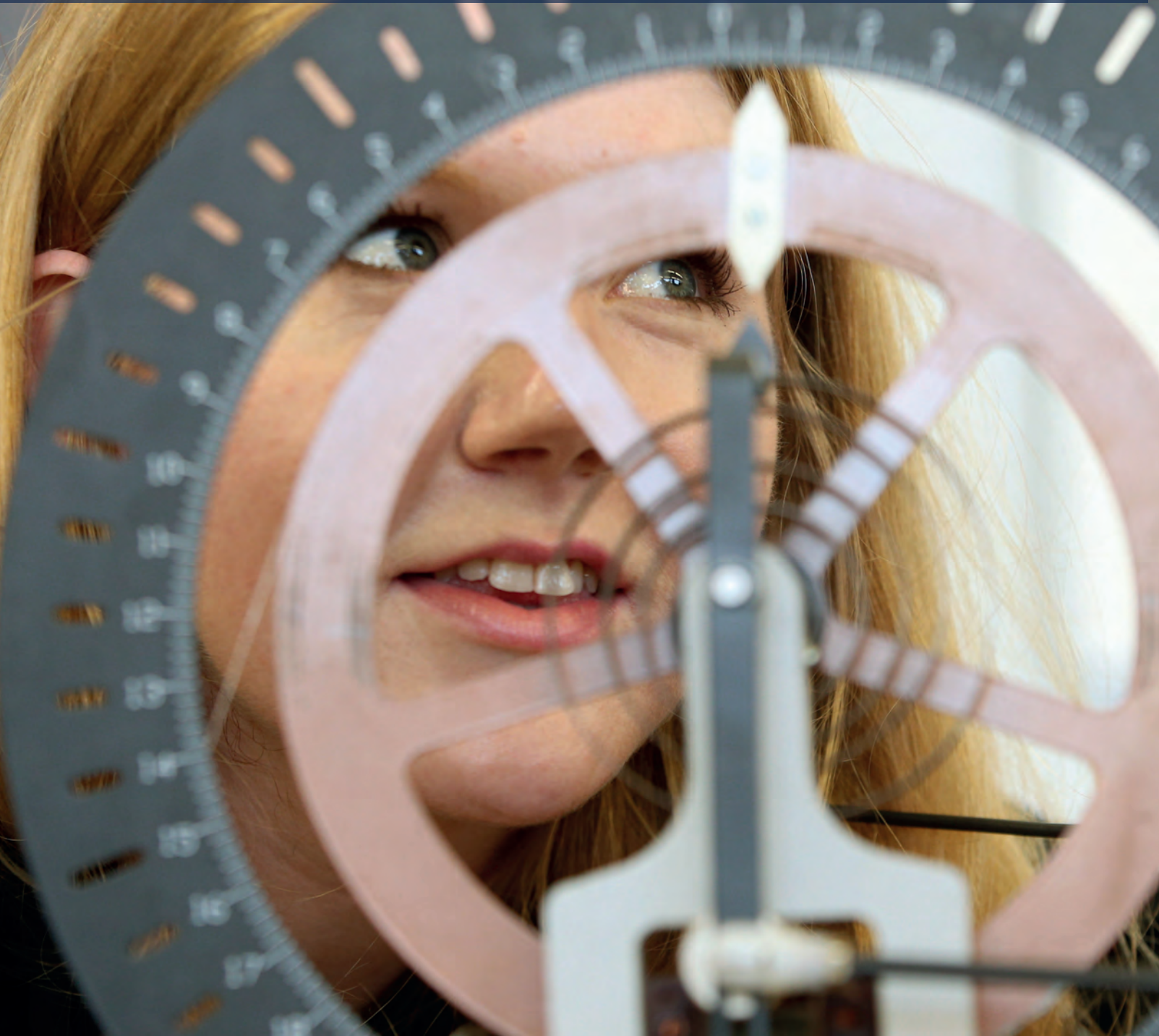
Cardiff is a thriving capital city and a vibrant centre for entertainment, sport and the arts. It is a great place, and we hope you will join us on our scientific adventure.




**Professor Peter Smowton**  
Head of the School of Physics and Astronomy

# Why study Physics and Astronomy?

Physics is the fundamental science which lies at the heart of all technology and engineering.







Physics and Astronomy degrees are for those who would like to discover the science behind the Universe and, at the same time, develop the problem-solving skills so valued by today's employers.

Physicists play a vital role in research and development, pushing forward the frontiers of knowledge and providing the basis for the innovations which revolutionise our world.

The contribution of Physics to industry is so important, that Physics graduates enjoy almost unrivalled job prospects in terms of variety, and availability.

### Your career

Our degrees are accredited by the Institute of Physics and are designed to develop the skills to prepare you for an exciting career.

Physics graduates are highly sought after by employers in every sector, from industry through education and commerce to healthcare. Strong, creative analytical, numerical, IT and problem-solving skills are at the top of every employer's list.

A good degree in Physics ensures that your skills in these key areas are developed to exceptional levels. The research project in the third and fourth years also develops your ability to work by yourself, directing your own research and planning your workload to produce an original piece of work.

The final report and presentation of your project also demonstrates that other fundamental skill - communication.

We encourage you to use your time at Cardiff to broaden your horizons and gain valuable employability skills, outside the Physics curriculum:

- first and second year students on some programmes may undertake Free Standing Modules, studying, for example, there are a number of opportunities to work with our outreach and public engagement teams to explain physics and astronomy to wider audiences, history, or a foreign language, for one module per year;
- students have the opportunity to undertake work experience placements, either over the summer break, or by taking a year out to do a Professional Placement;
- many other opportunities exist, and we really encourage you to get involved with the vibrant student life in Cardiff, not only to enhance your enjoyment of your time here, but also to help you build team-working, communication and project management skills.

Our dedicated Careers Advisor is available to help support you with career and work experience options, and to help you prepare CV's and job applications. We also provide you with lunchtime sessions from outside companies and hold bespoke STEM careers events for you to talk to prospective employers.

Many of our students use the knowledge and skills gained as part of their degree to obtain scientific, technical and computing jobs and a number of our students go on to postgraduate study. Education and science communication are also areas which value physics graduates. Other students find careers in the commercial, financial and business sectors where analytical and technical skills are highly valued.

# Studying with us

Cardiff University has a large and successful School of Physics and Astronomy.



Our academic staff are highly committed to their teaching and research, and are able to provide for a wide spectrum of interests and specialist subjects.

The School ranked 6th in the UK for quality in the 2014 Research Excellence Framework (REF). Current research projects attract multi-million pound funding from numerous sources, the most important of which are from government and international physical science research councils and space agencies.

The School is part of the multi-million pound Queen's Buildings complex, which also houses the School of Engineering. It has modern well-equipped laboratories, lecture theatres, computing facilities, conference suites, and a project resource centre. The award winning Trevithick Library has been completely redesigned to offer a variety of functional yet innovative learning spaces.

There are independent first, second and third year undergraduate Physics laboratories, which allow students to gain experience with a variety of experimental methods and equipment. In their final year, when undertaking an independent research project, students are encouraged to work with one of our research groups on a project of their choosing.

The School currently has a total of over 350 undergraduate students, recruiting around 130 each year. Students are engaged within the learning environment of the School from the outset, and the student-staff panel, weekly tutorials and student questionnaires are ways in which undergraduates feedback their suggestions and experiences to staff. In the National Student Survey, our students consistently rank us highly for overall satisfaction with their course, making us one of the best performing Physics departments in the Russell Group, and the UK as a whole.



There is a dynamic Physics and Astronomy Society (known as 'Chaos!') whose activities and social events contribute to the friendly atmosphere and excellent staff-student relations.

Flexible degree programmes reflect the breadth and depth of staff members' research activities. Students can study for a BSc or MPhys degree, choosing from several single and joint honours programmes of three, four or five years' duration. Foundation year studies are available as well as professional placements. The core modules of the first and second years give way to a range of options in the later years.

The courses are designed to provide access to applicants with varied educational backgrounds and to be relevant to the wide range of careers pursued by our students following graduation. All of our courses have been accredited by the Institute of Physics.

## Teaching, learning and assessment

Teaching and learning techniques reflect the most up-to-date research about effective methods. Lectures, tutorials and laboratory work are complemented by computer, project and skills-based modules. In addition, you may opt to spend time in a professional placement.

Assessment is thorough and varied, taking into account different learning styles and needs. Assessment may be by exam or based on coursework, presentations, teamwork exercises, written reports, or a combination of the above.

Our external examiner reports regularly confirm the robustness of our assessment procedures as evidence of the programmes' overall quality.

## Lectures

A significant part of the teaching is provided by the staff through lectures, typically 8-10 hours weekly. The subject matter is supported by course handouts, summaries and worked examples. Course material is also made available electronically through Cardiff University's Virtual Learning Environment, 'Learning Central.'

Lectures are recorded, providing students with the ability to review material for the duration of their studies.

## Practical work

Practical classes of four-hours per week form a key part of all our Physics and Astronomy courses. In the first year, the emphasis is on basic techniques, simple but accurate recording of observations and re-enacting some classic physics experiments. In later years, students progress to substantial experiments requiring planning, analysis and interpretation of results, and reporting to a professional standard.

In the final year of both BSc and MPhys courses you will undertake a major research project within one of our research groups. Particular emphasis is placed on these projects, as they enable students to develop their investigative skills and gain first-hand experience of the excitement of 'real life' scientific research. Students are able to choose the project that suits them from the wide range of cutting-edge work within the School. Recent projects have included 'Extracting gravitational wave signals from noisy data,' 'Measurement of radioactivity in small volume samples,' 'Herschel observations of exploding stars', and 'Electron states in a semiconductor super lattice (Kronig- Penny model)', to name just a few.

## Computational skills

Computing is an integral part of all our degree programmes. Undergraduates are taught how to use the latest software, develop computational models and to analyse data. All of this is taught on-site within our dedicated undergraduate computing suite.

The teaching of the python programming languages is embedded in all programmes starting in the first year and used in a variety of situations.

## Small group teaching and tutorials

Small group tutorials and one-to-one meetings with staff provide you with the opportunity to discuss coursework, receive feedback on your work, talk through various career options, and engage in deeper learning about the role of Physics and Astronomy in the wider context of daily life and society. In addition to your academic tutor, you will be assigned a personal tutor, who is a member of the academic staff. Personal tutors are there to advise you on academic, non-academic and personal matters in a confidential and informal manner. As well

as having a personal tutor, in your first year you will be partnered with a student mentor. Typically a second year student in the School of Physics and Astronomy, they will guide you through the first few weeks as you settle into university life.

## Student-staff panels

The Student-Staff Panel is the liaison between the School of Physics and Astronomy teaching staff and the undergraduate students. Two undergraduate student representatives are appointed from each year group and each subject area to represent the views of the student cohort. The aim of the panel is to give all students, via their rep, a forum where they can raise any problems they might be experiencing on their course, or to bring to the meeting anything positive that the School can incorporate into "best practice" policy.

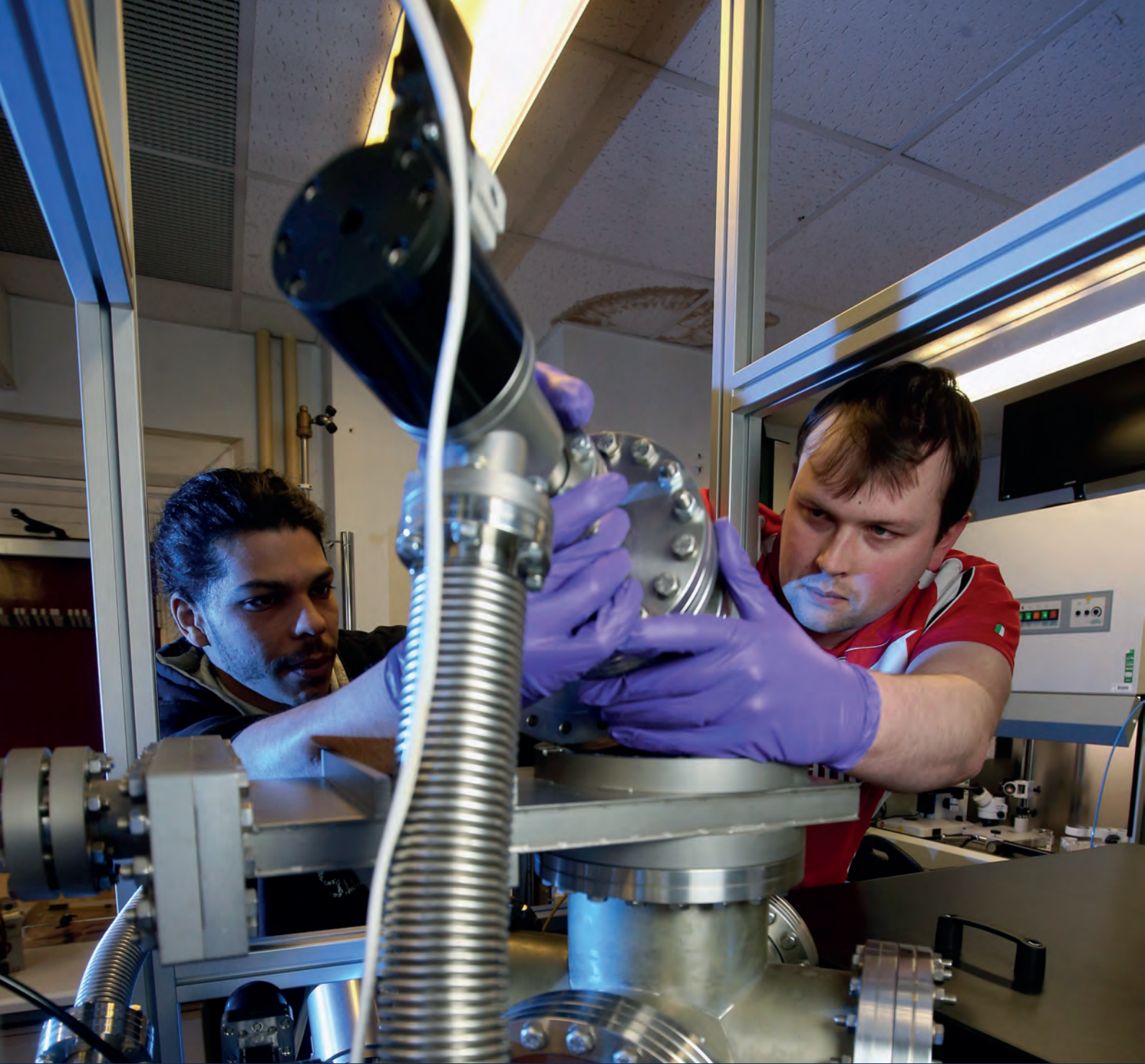
## Your first year at Cardiff

Your first year at university is an important period - it is a year in which you discover a new way of life and a different and exciting way of learning. We recognise that it is not always easy to decide exactly what degree option best suits your interests. Therefore, we have adopted a flexible first year structure with an essential set of core modules that are common to most courses. This allows a lot of freedom in swapping between most degree programmes by the end of the first year.

The range of modules offered in the first year is designed to stimulate your interest in Physics, whilst giving you a sound foundation to build upon in subsequent years. You will develop scientific, mathematical and computing skills that are at the heart of Physics, as well as acquiring more general attributes such as communication and presentational abilities that are essential in all professional careers.

## Commitment to Gender Equality

The School of Physics and Astronomy is committed to support the advancement of the careers of women, and gender equality more broadly. In 2021 the school received an Athena Swan Silver Award from the Equality Challenge Unit, building on its Juno Champion status awarded by the Institute of Physics in 2020.



I wanted to **study Physics** because I want to understand how the universe works and learn how you can apply physics to modern medicine. I really liked studying physics at Cardiff because there are lots of resources available, and the **lab projects** were very interesting. The city is cheap and affordable and the people are great.

Imran, MPhys Physics



# Facilities and location



The School of Physics and Astronomy is part of the multi-million pound Queen's Buildings complex which also houses the School of Engineering, and the School of Computer Science and Informatics.

## Location and transport

We are located in the heart of the city of Cardiff, close to local and national transport links with the main shopping centre, sporting facilities, parks and entertainment all on our doorstep.

## Teaching and library facilities

The School of Physics and Astronomy has modern well-equipped laboratories, lecture theatres, computing facilities, conference suites, and a project resource centre. We also have the Trevithick Library which provides a variety of functional yet innovative learning spaces for studying individually or in groups. Students are also welcome to use any and all other libraries that we have to offer.

## Lab facilities

We have independent first, second and third year undergraduate Physics laboratories which allow students to gain experience with a variety of experimental methods and equipment. For example, we have access to Microwave Plasma Chemical Vapour Deposition (CVD) facilities in our Cardiff Diamond Foundry, and to Cardiff University Brain Research Imaging Centre.

## Institute for Compound Semiconductors

We also have a close relationship with the Institute for Compound Semiconductors which aims to position Cardiff as the European leader in compound semiconductors, providing cutting-edge facilities that help researchers and industry work together. The Institute will soon be moving into the brand-new, purpose-built Translational Research Facility as part of Cardiff University's £300M Innovation Campus.

## Cleanrooms

We have two class-1000 cleanrooms, which have extensive experimental and theoretical capability, including low-energy electron microscopy, ultrafast non-linear optical microspectroscopy, and device structure fabrication and testing. One of these is a £4m refurbished 225 square metre cleanroom; located in the Queen's Building, the ICS cleanroom has completed a £600,000 refit to improve room conditioning in preparation for new equipment.







Image courtesy of the European Southern Observatory

I recommend Astrophysics at Cardiff because it has a fantastic atmosphere. Staff are helpful and are very committed to their research giving us a real look at research life in physics. I love Cardiff because of the cheap cinemas. It is something I always tell prospective students about at Open Days!

**Alex Loader**, Astrophysics



# Our degree Programmes

All of our courses have a common framework in the first year of study allowing you to change your choice of degree should you wish.

In the first year you have the opportunity to study a “free-standing” module from another School in the university e.g. you might choose a foreign language, literature, or business studies.

All of the degree programmes are modular with the equivalent of six modules taken in each of the Spring and Autumn semesters. All of the modules will contain some element of continual assessment.

Weekly tutorials and exercise classes related, to the module content, ensure that students have a high level of support within their first year at Cardiff. The second year continues to build on the core physics material and extends the range of choice available through optional modules.

The final years of our degrees allow students to specialise and study selected topics in depth. The majority of the modules taken at this stage are optional. A research project forms an important part of the teaching in both years. Both third and fourth year projects are linked to the research work of the School and provide the opportunity for students to work alongside world leading scientists in cutting-edge research. The research projects will provide you with important skills for your future career such as presentation skills, report writing and data analysis.

## Courses with a placement year

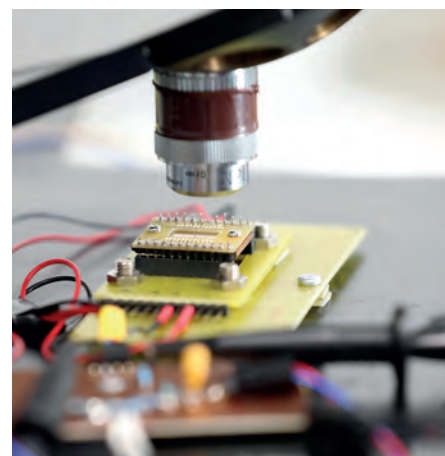
If you choose one of our courses which includes a placement year, then your third year is spent on a professional placement in industry, commerce, government, or another relevant placement provider approved by the University. It is designed to help you further develop your problem solving skills, to enhance your employability, and to gain valuable practical work experience.

## MPhys or BSc?

Whether you decide to study for the three-year BSc or the four-year MPhys will depend on the depth to which you wish to study your chosen field, and the career you wish to pursue after graduation. The final decision to around which degree type you follow can be made up to the end of your second year, and it is based on your personal aspirations as well as academic performance. The MPhys course gives you the opportunity of studying six modules in greater depth than the BSc course. It also gives you the opportunity to undertake a major research project which will be based in one of the School's research groups. This is an exciting way of contributing to real research and developing the skills that will enable you to become an effective research scientist in your own right.

## Foundation programme

For those students who do not have the required qualifications or subjects at A-level you might like to undertake a foundation year programme (H101). Upon successful completion of the Foundation programme you will be accepted into the Physics and Astronomy course of your choice.



## Entry requirements

A typical offer would include three A-levels in the range AAA to ABB. Subjects should include Mathematics and Physics and can include the Welsh Baccalaureate (not General Studies or Critical Thinking).

For those sitting the International Baccalaureate, we require 34 points overall and scores of 6 in Physics and Maths at higher level.

We welcome applications from those with alternative qualifications. We will consider applications from those who were unable to study A-level Physics (or equivalent) but who have very good grades in Mathematics. Each application will be assessed individually.

More information is available on our website at: [www.cardiff.ac.uk](http://www.cardiff.ac.uk)

The School of Physics and Astronomy offers a wide range of degree programmes:

**BSc Hons Physics** (3 years) F300

**BSc Hons Physics with Astronomy** (3 years) F3F5

**BSc Hons Astrophysics** (3 years) F511

**BSc Hons Physics with Medical Physics** (3 years) F350

**BSc Hons Physics with Professional Placement** (4 years) F302

**BSc Hons Physics with Astronomy with Professional Placement** (4 years) F3FN

**MPhys Hons Physics** (4 years) F303

**MPhys Hons Physics with Astronomy** (4 years) F3FM

**MPhys Hons Astrophysics** (4 years) F510

**MPhys Hons Physics with a Professional Placement** (5 years) F304

**MPhys Hons Physics with Astronomy with a Professional Placement** (5 years) F5F3

# Physics

Physics BSc, UCAS code: **F300**

Physics MPhys, UCAS code: **F303**

Physics with Professional Placement BSc, UCAS code: **F302**

Physics with Professional Placement MPhys, UCAS code: **F304**

You will find that our Physics degree courses are designed to perfect those with an enquiring mind, designed to provide you with a broad education in how theoretical and experimental physics can be used to describe the Universe.

The Physics degree programme starts with the common core of physics modules in the first year and then leads into a selection of modules. The course is designed to give you a broad physics education and, in addition, supply you with a wide range of mathematical and computational skills.

It also aims to give you an insight into the impact of physics on modern technologies.

This course is fully accredited by the Institute of Physics (IOP) and is delighted to prepare you for a career in industrial or academic research and development, education or other sectors which require a practical, numerate and analytical approach to problem-solving, such as business, finance and government.

You will study a wide variety of different topics, ranging from quantum mechanics to optics, to atomic and nuclear physics. Key computing skills are taught throughout the course including programming using Python. Mathematics is taught alongside the major Physics concepts in all years, with specific modules in the first year. It is fundamental to understanding the subject and is incorporated into many modules.

You will be taught through traditional lectures, tutorials and laboratory work as well as computer-based exercises, projects and other skills-based exercises. The structure of the course is systematic, with each new semester building on the fundamental skills and understanding learnt in the previous one. Exercises are an integral part of all

lecture-based modules, and these give you the opportunity to apply your knowledge, increase your critical awareness and enhance your problem-solving skills.

## The MPhys degree

The MPhys course is designed for those students who have a clear intention of studying Physics to a greater depth than the three year course will allow. During the first two years, you will study the same selection of core modules as for the BSc, then in the third and fourth years you will study a range of core and optional modules. In your fourth year half of your time is spent on a project, which gives you a chance to undertake an extended piece of research work in conjunction with one of the research groups within the School.

This is an exciting and challenging way to build upon the experience of project work gained in your third year, to strengthen your confidence to tackle independent research and to develop the skills necessary to explain your work to others, both by giving talks and in writing scientific reports.

The large range of project topics available reflects the research interests of the School. These range from computer modelling of complex protein interactions to the characterisation of quantum dot lasers for ultra-high speed internet systems. And if you can't find a project to fire your imagination, you can always develop your own in consultation with the academic staff.



## The professional placement year

You can choose to take a Professional Placement Year with either the BSc or MPhys. This will enable you to take a year as part of your degree working in industry or another organisation while receiving a salary. This will give you employability skills and confidence and is a valuable addition to your degree. It is also quite common that students who spend a year in a particular company end up being offered employment with them when they graduate. Support and advice will be available to help you find suitable placement opportunities.

Our Physics degree courses are fully accredited by the Institute of Physics.



# Physics with Astronomy



Physics with Astronomy BSc, UCAS code: **F3F5**

Physics with Astronomy MPhys, UCAS code: **F3FM**

Physics with Astronomy with Professional Placement BSc,  
UCAS code: **F3FN**

Physics with Astronomy with Professional Placement MPhys,  
UCAS code: **F5F3**

If you choose to study one of our Physics with Astronomy degrees you will be investigating the science behind the development of our universe, from how it began to the astronomical events that we are now discovering for the first time.

Here at Cardiff University, we have been involved in many of the recent new discoveries, from the detection of gravitational waves for the first time to understanding the evolution of galaxies and the first images of black holes.

Studying Physics with Astronomy will give you insights into these fascinating events, as you will be taught by staff whose research is leading to these discoveries. You will gain the knowledge and skills you need to become an astrophysicist, or you could use the analytical, mathematical and computing skills you will acquire to choose from a wide range of professions.

As you progress, you will acquire the core skills and understanding that will allow you to follow your special interests in physics and astronomy. You will develop the mathematical and computing skills that enable you to analyse data and solve problems, while gaining the confidence to design and conduct experiments in the laboratory. The first year will cover the underpinning modules such as mechanics and matter, mathematical methods for physicists, computing and practical experimental and analytical skills, and this knowledge and understanding will be further developed as you continue through the course.

Our Observational Techniques module will give you practical experience in carrying out a real project using the astronomical

observation programme from Las Cumbres Observatory which uses a range of robotic telescopes from around the world.

You will also be able to further your understanding and knowledge of astronomy, and apply your skills to analyse and solve astronomical problems. You can choose optional modules along with your core modules, which together will allow you to study a range of fascinating areas such as:

- the physical properties of the Earth and the observation and exploration of the planets and moons in other solar systems;
- observational techniques in astronomy;
- an understanding of quantum mechanics and nuclear physics;
- the formation and evolution of stars;
- solving unseen problems in astrophysics;
- the Big Bang and contemporary cosmology;
- the formation and evolution of galaxies.

For your final year project, you can choose to work with some of our astronomers on a project related to a particular research area.

## The MPhys degree course

If you choose the four year MPhys degree course your first years will be very similar to the BSc course but it is an advanced degree and as you continue your course into

the third and fourth year you will be able to study selected topics in greater depth and specialise according to your interests. The final decision as to which degree type you follow can be taken up to the end of your second year, and it is based on your personal aspirations as well as academic performance.

In Year four, you will undertake an extended research project working alongside the School's researchers developing your analysis, synthesis and problem solving – the key skills needed by a professional astronomer or astrophysicist. This is an exciting way of contributing to real research and developing the skills that will enable you to become an effective research scientist in your own right.

## The professional placement year

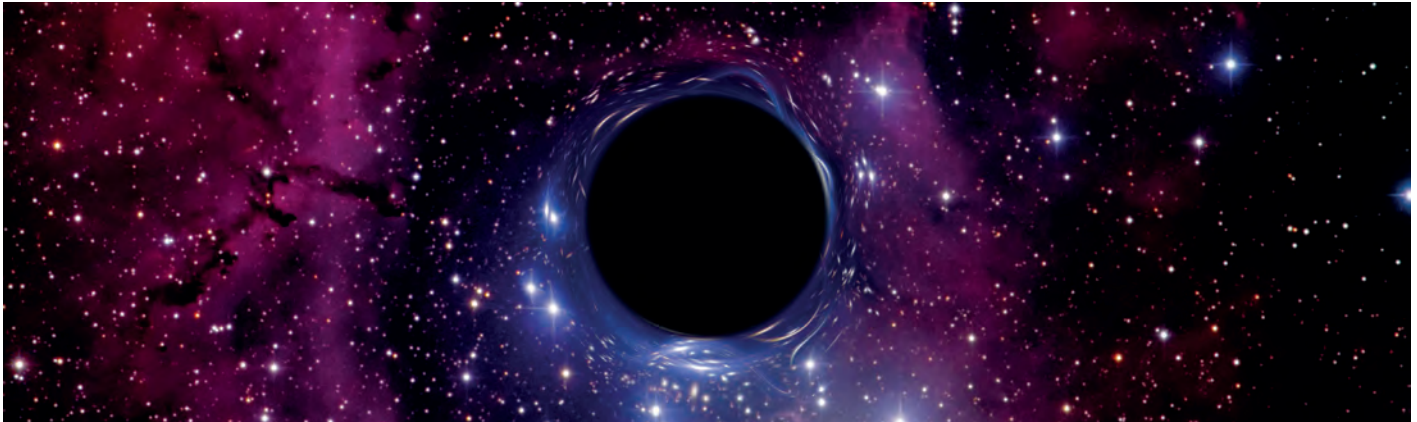
You can also choose to take either the BSc or MPhys in Physics with Astronomy with a Professional Placement Year which will enable you to take a year as part of your degree working in industry or another organisation while receiving a salary. This will give you employability skills and confidence and is a valuable addition to your degree. It is also quite common that students who spend a year in a particular company end up being offered employment with them when they graduate. Support and advice will be available to help you find suitable placement opportunities.

Our Physics with Astronomy degree courses are fully accredited by the Institute of Physics.

# Astrophysics

Astrophysics BSc, UCAS code: **F511**

Astrophysics MPhys, UCAS code: **F510**



Astrophysics is the application of physics to the study of distant regions like our solar system, stars and galaxies, and the evolution of the Universe.

The BSc and MPhys Astrophysics degree courses are more specialist courses than our broader Physics with Astronomy degrees. They are intended for those who want to concentrate on astronomy and they provide the opportunity to study the subject in detail, gaining a deeper insight through theoretical as well as observational and instrumentation work.

They will provide you with the core skills and knowledge you need in physics and mathematics, combined with an understanding of observational astronomy and the theoretical aspects of astrophysics.

Our researchers here at Cardiff are working at the forefront of research in astrophysics and we have been involved in many of the recent major discoveries such as the detection of gravitational waves, investigating how planetary systems form and evolve, and producing the first real images of black holes.

Combined with your core physics modules, which form the basis for your study of astrophysics, you will also learn about:

- observational techniques in astronomy;
- the stars and their planets;

- galaxies and galaxy evolution;
- the formation and evolution of stars;
- high energy astrophysics;
- solving unseen problems in astrophysics;
- cosmology and the Big Bang theory of the Universe.

Our Observing the Universe module, will give you the opportunity to develop your observational skills and techniques as you will be able to use the observational programme at Las Cumbres Observatory, which controls a range of telescopes and observatories from across the world from Australia to California and South Africa to Hawaii.

In your final year, you will undertake an astrophysics research project using the skills and techniques you have learned as you have progressed through the course. Your project may involve analysing data from our international or space-based telescopes, trying to understand the physics of the Universe using computer modelling, or maybe detecting extrasolar planets.

The course aims to prepare you for a career in industrial or academic research and

development, education, or any careers which require a practical, numerate and analytical approach to problem solving.

## The MPhys degree course

The four year MPhys degree course is a great choice if you want to study Astrophysics in more depth, and at a more advanced level.

Your first years will be very similar to the BSc course; but is an advanced degree, and as you continue your course into the third and fourth years you will be able to specialise according to your interests and study selected topics in greater depth.

The final decision as to which degree type you follow can be taken up to the end of your second year, and it is based on your personal aspirations as well as academic performance.

Year four involves a significant research project where you can work alongside our researchers on one of the research areas which interests you. You will develop the analytical, problem-solving and research skills which are needed by professional astronomers or astrophysicists. You will also be part of the School's research team, learning how to become a real research scientist and working on real challenges.

Our Astrophysics degree courses are fully accredited by the Institute of Physics.



# Medical Physics

## Physics with Medical Physics BSc

UCAS code: **F350**



### Physics with Medical Physics involves the application of physical principles to the diagnosis and treatment of human injury, illness and disease.

You will find that this often results in developments in technology, which includes both instruments and techniques, e.g. the stethoscope, the sphygmomanometer for measuring blood pressure, magnetic resonance imagers (MRIs) and linear accelerators for treating cancer.

The contribution to modern medicine by physics is considerable and is just as important as that of biology and chemistry.

Medical Physics techniques vary widely and utilise a range of physical phenomena including electricity, magnetism, ultrasound, radioactivity, and the whole spectrum of electromagnetic radiation. In all these applications, precise and accurate measurement is of great importance and developments have, in large part, been

enabled by the startling growth in computing power over the past few decades.

Our Physics with Medical Physics degree course is provided in conjunction with the Cardiff & Vale and Velindre NHS Trusts, with specialised modules being taught by professional medical physicists. It is designed to give you a thorough grounding in Physics, and a broad introduction to the major topics in medical physics.

As in our other degree courses, you will gain the core skills in physics, mathematics and computing while being able to follow your interests in more specialised medical physics topics such as:

- digital medical imaging;
- medical ultrasound;

- radiation in medical diagnosis;
- how the human body works.

In your final year, you will undertake an extended project which will usually be hospital based or at Cardiff University Brain Research Imaging Centre (CUBRIC), and there are a range of areas in which you can choose to specialise.

The course provides an excellent basis for a range of careers. Many of our graduates are successful in obtaining places on the UK-wide training scheme for clinical medical physicists run by the Institute of Physics and Engineering in Medicine, while others undertake medical physics research or find employment with international medical equipment companies.

Our Medical Physics degree courses are fully accredited by the Institute of Physics.

# A capital city



Cardiff is a compact city with an enormous character. Nestled between the rugged coastline and breathtaking mountainous scenery of Wales, the country's capital is a cornucopia of culture, marrying historical delights with cosmopolitan amenities.

Providing an endless array of activities, one stroll through its cobbled streets can see you learn about the rich tapestry of Cardiff's past at Cardiff Castle, before soaking in the atmosphere as the crowds spill from the Principality Stadium after one of the many sporting events it holds year round.

The vibrant and independent culinary scene is the heartbeat of the city. With something

to please every palate, you can enjoy fine dining, plant-based treats and exotic cuisines from almost every corner of the globe, without forgetting Welsh cakes for dessert!

Wales is the land of song, and Cardiff certainly contributes heftily to this legacy. This city is built with music running through its veins, from the oldest record store in the world Spillers Records, which is tucked away in Morgan Arcade, to more contemporary and intimate venues which host some of the world's most exciting new musical talent.

Though your Cardiff bucket list may be bursting at the seams, be sure to make a little room for our National Museum which is a place of

true wonder, while the iconic Wales Millennium Centre in the idyllic setting of Cardiff Bay is simply not to be missed.

Bustling with personality, Cardiff is a city made for students, offering an endless string of entertainment opportunities while remaining inexpensive and easy to navigate.

The modern shopping centres, aesthetic arcades, luscious green parks and thriving nightlife are a huge draw for living in Cardiff, though you'll always find your way back to our Students' Union, which is the true home of the student scene in the city.

“With an exhilarating mix of heavyweight cultural sights, exciting regeneration projects – not least the revitalised Cardiff Bay – world-class sport, a prolific music scene and some seriously banging nightlife, it's easy to see why Cardiff now ranks alongside London and Edinburgh as one of the UK's most compelling destinations.”

The Complete University Guide, 2017



# A leading university

**RUSSELL  
GROUP**



“Cardiff University is highly rated on a local and global scale.”

The Telegraph, 2018

Our students learn from leading researchers in over 300 courses across the University. As Wales’ only Russell Group institution, we have gained an international reputation for excellence in teaching and research, which is built from our history of achievement since 1883.

Cardiff University becomes home for approximately 5,500 new undergraduate students every year. While competition for places is strong, we pride ourselves on being an inclusive university, welcoming applications from everyone who wishes to study with us.

We are a global university with over 7,500 international students from more than 100 countries and open our doors to all applications, irrespective of background.

## Facilities and development

Committed to investing in our services, Cardiff University is home to new and well-equipped laboratories, lecture theatres, libraries and

computing facilities to name a few, with more exciting developments continuously underway.

We take our environmental, safety and security responsibilities seriously, embracing our comprehensive Energy, Water and Waste Policy, which is already making great savings in energy consumption and helping us to do our bit to tackle climate change.

## Global Opportunities

We are partnered with over 200 leading institutions across the world, and our Global Opportunities team will help you to gain valuable international experience, through study, work or volunteering.

## Supporting you

Our student support and wellbeing centres deliver a substantial range of services available to all students that are free, impartial, non-judgemental and confidential, aimed to help you make the most of student life and support you during your study.

We are also rated as one of the best universities for supporting LGBT+ students and are proud to be ranked highly in the Stonewall Workplace Equality Index.



## Virtual campus tour

Discover more about the University and the city of Cardiff through our interactive online tour at:

[virtualltour.cardiff.ac.uk](https://virtualltour.cardiff.ac.uk)



# Living in Cardiff



“Cardiff has one of the biggest, best and most active students’ unions in the UK, with high quality facilities including Y Plas, a 2,150 capacity nightclub; and the Great Hall, a major concert venue.”

Complete University Guide, 2019

Cardiff is the perfect place to be a student. It mirrors the hive of activity a big city offers, but in an intimate and compact setting with endless character. Drink in the atmosphere, soak up the culture and get stuck into the host of activities available in our city; your new home.

## A guarantee of accommodation

If you accept your offer of a place at Cardiff on a firm basis, you are guaranteed a single occupancy place in University accommodation during your first year, living with other first year undergraduate students.

The residential dates for your particular accommodation will be confirmed in your Offer of Residence.

## Residence Life

While staying in Cardiff student accommodation, you will have access to the incredible service provided by the Residence Life Team who work tirelessly to enhance your student experience.

Working in partnership with Student Support and Wellbeing, the Residences Office and the Students’ Union, Residence Life will welcome you to Cardiff and help you to make a smooth transition into University.

They also help foster a strong sense of community through social events and cultural activities, as well as practical support too.

## Students’ Union

Our Students’ Union is at the heart of the Cardiff student experience. It’s a student-led and independent part of the University, dedicated to making your time with us the best it can be.

Built on the foundation of inclusion, diversity, personal development and friendship, the Students’ Union runs a range of activities and services to help enhance your Cardiff University experience.

These include advice, training, skills development, entertainment, volunteering opportunities and employment throughout your time at Cardiff and to prepare you for a career after University too.

## Find out more . . .

### Accommodation

For further information please visit our website: [www.cardiff.ac.uk/residences](http://www.cardiff.ac.uk/residences)

You can also watch our residences film online at: [www.youtube.com/watch?v=hxzX-dYLF8](https://www.youtube.com/watch?v=hxzX-dYLF8)

### Students’ Union

 [facebook.com/cardiffstudents](https://facebook.com/cardiffstudents)

 [snapchat.com/add/cardiffstudents](https://snapchat.com/add/cardiffstudents)

 [instagram.com/cardiffstudents](https://instagram.com/cardiffstudents)

 [@cardiffstudents](https://twitter.com/cardiffstudents)

 [www.youtube.com/cardiffstudents](https://www.youtube.com/cardiffstudents)



# Applications



To be considered for entry onto any of the undergraduate courses offered in the School of Physics and Astronomy, you should apply through UCAS:

UCAS, Rosehill, New Barn Lane, Cheltenham, Glos, GL52 3LZ, UK

[www.ucas.com](http://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). Students will 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 in the range of AAA-ABB at A-level.

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 those students sitting the International Baccalaureate, we require 34 points with 6 in 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 Coursefinder web pages at: [www.cardiff.ac.uk/courses](http://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](http://www.cardiff.ac.uk/international)

## Employment

The School and University are able to offer term-time and vacation employment to some undergraduate students.

This is operated by the University's own student employment agency. The School's Careers and Industry Liaison Officer is also available to offer employment guidance to students.

## Equality and diversity

We are committed to supporting, developing and promoting equality and diversity in all our practices and activities.

We aim to establish an inclusive culture free from discrimination and based upon the values of dignity, courtesy and respect. We recognise the right of every person to be treated in accordance with these values.

We are committed to advancing equality on the grounds of age, disability, gender reassignment, marriage and civil partnership, pregnancy and maternity, race, religion and belief (including lack of belief), sex and sexual orientation and to fostering good relations between different groups.

For further information, please visit: [www.cardiff.ac.uk/public-information/equality-and-diversity](http://www.cardiff.ac.uk/public-information/equality-and-diversity)

## Applications *continued*



### Open Days

You will meet students and staff, providing us with the opportunity of getting to know more about you and enabling you to find out what life is like as a physics student at Cardiff. These visits include tours of the University and School, allowing you to see such facilities as the library, Students' Union, PC laboratory, experimental laboratories and research facilities. There are illustrated talks describing the courses and demonstrations of the research work carried out in the School. You will have an opportunity to talk to current students as well as have a one-to-one chat with the teaching staff, sample our refectory food, browse the library, visit our teaching and research facilities, so that you can see for yourself what it's like to be a student at Cardiff.

There are also University-wide Open Days held each year. Details are available on the University website in advance at:

[www.cardiff.ac.uk/openday](http://www.cardiff.ac.uk/openday)

### Student support

Whether or not you use student support services it's reassuring to know that they are available to you should you need them. Every student is assigned a personal tutor but should you need extra support we have a range of services available to you. Such as;

- Disability and Dyslexia support
  - Email: [disability@cardiff.ac.uk](mailto:disability@cardiff.ac.uk)  
Tel: **+44 (0)29 2087 4844**
  - Email: [dyslexia@cardiff.ac.uk](mailto:dyslexia@cardiff.ac.uk)  
Tel: **+44(0) 29 2087 4844**
- Counselling and Wellbeing Guidance  
Email: [wellbeingandcounselling@cardiff.ac.uk](mailto:wellbeingandcounselling@cardiff.ac.uk)  
Tel: **+44 (0)29 2087 4966**
- International Student Support  
Email: [iss@cardiff.ac.uk](mailto:iss@cardiff.ac.uk)  
Tel: **+44 (0)29 2087 6009**
- Student Mentor Scheme  
[www.cardiff.ac.uk/study/student-life/student-support](http://www.cardiff.ac.uk/study/student-life/student-support)

### Tuition fees and financial assistance

The University charges an annual fee which covers all tuition fees, registration and examinations other than the re-taking of examinations by applicants not currently registered. Please note charges for accommodation in University Residences are additional.

#### Tuition fees

Please see the following website for more information: [www.cardiff.ac.uk/fees](http://www.cardiff.ac.uk/fees)

#### Scholarships and bursaries

For more information please visit the following website: [www.cardiff.ac.uk/scholarships](http://www.cardiff.ac.uk/scholarships)

#### For further information contact:

##### Dr Chris North

Director of Admissions and Recruitment  
School of Physics and Astronomy  
Queen's Buildings  
The Parade Cardiff CF24 3AA

Tel: **029 2087 6457**

Email: [physics-admissions@cardiff.ac.uk](mailto:physics-admissions@cardiff.ac.uk)





## Important Legal Information

The contents of this brochure relate to the Entry 2022 admissions cycle and are correct at the time of going to press in January 2022. 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](http://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.

Cardiff University is a registered charity, no. 1136855

## How to find the School

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

## Key

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

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](mailto:RobertsL9@cardiff.ac.uk)

**CARDIFF**  
UNIVERSITY

PRIFYSGOL  
CAERDYDD

To find out more about the  
School of Physics and Astronomy  
please visit our website:

[www.cardiff.ac.uk/physics-  
astronomy](http://www.cardiff.ac.uk/physics-astronomy)

## Contact us

Tel: **029 2087 6457**

Email:

[physics-admissions@cardiff.ac.uk](mailto:physics-admissions@cardiff.ac.uk)

**School of Physics and Astronomy**

Cardiff University

Queen's Buildings

The Parade

Cardiff CF24 3AA

## Stay in touch



cardiffschoolofphysics



@CardiffPHYSX

## Student life

Got questions about student life?

Get them answered at:

[www.cardiff.ac.uk/  
studentbloggers](http://www.cardiff.ac.uk/studentbloggers)

Want to know more about life at  
Cardiff University? Our student  
bloggers are recording their  
experiences and are happy to  
answer your questions.

Our student bloggers are real  
students studying on a range of  
courses. They are here to answer  
any questions you have about life at  
Cardiff University. What's a typical  
day like? What clubs and societies  
are there? Is Cardiff's music  
scene any good? It can be almost  
anything.

