School of Physics and Astronomy
FACULTY OF MATHEMATICS AND PHYSICAL SCIENCES

UNIVERSITY OF LEEDS

PHYSICS AND ASTRONOMY
UNDERGRADUATE DEGREES 2018

Come and find your place
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### OUR COURSES

- Physics BSc
- Physics MPhys, BSc
- Physics with Astrophysics BSc
- Physics with Astrophysics MPhys, BSc
- Theoretical Physics BSc
- Theoretical Physics MPhys, BSc

## IMPORTANT INFORMATION

Information provided by the University such as in presentations, University brochures and the University website, is accurate at the time of first disclosure. However, courses, University services and content of publications remain subject to change. Changes may be necessary to comply with the requirements of accrediting bodies or to keep courses contemporary through updating practices or areas of study. Circumstances may arise outside the reasonable control of the University, leading to required changes. Such circumstances include, industrial action, unexpected student numbers, significant staff illness (where a course is reliant upon a person’s expertise), unexpected lack of funding, severe weather, fire, civil disorder, political unrest, government restrictions and serious concern with regard to the transmission of serious illness making a course unsafe to deliver.

After a student has taken up a place with the University, the University will look to give early notification of any changes and try to minimise their impact, offering suitable alternative arrangements or forms of compensation where it believes there is a fair case to do so. Offers of a place to study at the University will provide up to date information on courses. The latest key information on courses, entry requirements and fees can be found at [www.leeds.ac.uk/courses](http://www.leeds.ac.uk/courses). Please check this website before making any decisions.
As a physics graduate, you'll be recognised as an intelligent, analytical problem-solver, with wide-reaching career opportunities in areas such as research, manufacturing, aerospace, education, electronics, energy, environment, health, transport, finance, media, and many more.

At Leeds we have an active research environment that enables us to offer exciting courses taught by experts who are leaders in their fields. You'll be directly engaged in research through project work.

Your degree from the University of Leeds and the wider experience you'll gain while you're studying here will help you stand out from the crowd and secure that all-important graduate job.

“We're very proud to have been named University of the Year 2017 in The Times and The Sunday Times Good University Guide in recognition of our high-quality teaching and excellent student support.”

DR ROBERT PURDY, SCHOOL OF PHYSICS AND ASTRONOMY UNDERGRADUATE ADMISSIONS TUTOR
Don't just learn physics. Do physics.
We give you the opportunity to gain hands-on experience applying material from your lectures and tutorials to real-life problems.

You will undertake a project in your final year, working with one of our inspirational research groups. This might focus on astrophysics, condensed matter, nanoscale physics, soft matter, theoretical physics, or a related area.

Our third-year group industrial project optional module gives you the chance to investigate an application of physics in response to a real-life scientific problem set in an industrial, commercial or research context, making a real contribution to an industrial client.

Through our summer research placements, you could join one of our research groups. You would work alongside physics academics for a period of six weeks, be paid a salary and contribute to real research projects.
RESEARCH-BASED DEGREES

Learn specialist knowledge from leading researchers.

We study everything from the formation of stars to contact lenses to quantum computers. We’re at the forefront of developing medical applications of physics and are leaders in spintronics research.

We undertake our research alongside where you will study, which means you will have the opportunity to get involved with research during your time with us.

Our courses offer you the chance to specialise in a particular area of physics that interests you the most. By selecting specific optional modules during your degree, you could take your learning down a specialist pathway in areas such as quantum physics, spintronics, biological and nanoscale physics, stellar and planetary formation, medical imaging or environmental physics.

DISCOVERY MODULES

As well as the compulsory and optional modules that make up your course, you’ll also have the opportunity to choose discovery modules. There are many discovery modules to choose from, allowing you to pursue interests outside physics during your course.

INTEGRATED MASTERS

All our degrees are available as three-year BSc degrees, or four-year MPhys, BSc Integrated Masters degrees. An Integrated Masters is a four-year degree that extends your studies to Masters level, enhancing your career prospects or setting you up to pursue a PhD.

It is possible to transfer between BSc and MPhys, BSc variants of a course during the first two years of your studies, as long you’re meeting the required academic standards.

INDUSTRIAL PLACEMENTS AND STUDY ABROAD

All our physics courses give you the chance to do a study abroad year or an industrial placement year.

STUDENT SUPPORT

We take student support seriously. You’ll be assigned a personal tutor to guide you through your studies with us, and can receive lots of support from fellow students through our peer mentoring scheme.

Using our Virtual Learning Environment, you can access learning resources including reading lists, past exam papers, skills guides and assessment guides. You’ll also be able to play back video recordings of most of your lectures and download lecture notes.

JOIN PHYSOC

You can join Physoc, a student-run society for physics students. The society organises guest lectures and trips abroad to physics-related facilities such as CERN and ITER. It also holds social events including bowling, nights out and coffee bar socials.

ACCREDITATION

All our degrees are accredited by the Institute of Physics (IoP). This is a sign of quality which is recognised and valued by employers around the world. Studying an IoP-accredited degree course is the first step towards becoming a chartered physicist (CPhys).

WORLD-LEADING FACILITIES

We have all the facilities you’ll need to support and enhance your academic studies and the University is investing millions of pounds each year to ensure we maintain a first-class academic environment. From laboratories and lecture theatres to one of the largest and most impressive libraries in the UK, you’ll find everything you need for your studies right here on campus.
FIONA TORZEWSKA
MPHYS, BSC THEORETICAL PHYSICS STUDENT

Physics at Leeds is very different from doing it in school, where the curriculum comes straight from a textbook. During my course I have been able to get involved in so much active research.

After my second year, I began my first summer research project in quantum optics with Dr Almut Beige. Working on a research project is very different from studying normal modules. I was given a lot of responsibility to research completely new topics, which no one knew the answer to, and my ideas were always listened to and taken seriously. It was great to be able to have an opportunity to study independently without the pressure of exams and my interest in the subject developed hugely as a result.

This project was mainly computation based and I was really surprised by what I was able to achieve. It showed me how much I had learnt in the first half of my degree. The material I covered that summer was closely related to a fourth-year module, which meant I was already ahead when I began that module and took some of the pressure off my fourth year.

During my summer research placement we got some very interesting and surprising results. We have since written a paper of which I am a co-author, which will hopefully be published in a scientific journal later this year. This really made it feel like I had achieved something worthwhile and led me to consider going into research following university. Already having my own paper published really makes me stand out against other applicants.
I most enjoyed the hands on experience I had while studying physics at Leeds. It was incredibly satisfying to conduct a laboratory experiment, attain results and produce a conclusion. The final-year project was by far the best part of the course, allowing me to develop my own experimental procedure to answer a question provided.

My summer research placement allowed me to be involved in real physics by researching a new method for cancer cell detection. Through the development of a microfluidic set-up, I was able to develop a method of measuring the deformation of oil droplets as they are compressed by opposing flows. This methodology could then later be applied to human cells, which deform differently depending on whether they are healthy or cancerous.

To be able to say that you’ve already done some research in your undergraduate degree, before you’ve even moved on to a PhD or further work, is invaluable.
Our BSc and MPhys, BSc Physics degrees develop your knowledge of core physics while allowing you to explore advanced, boundary-pushing topics, according to your interests. Throughout the course, we ensure that your experience goes beyond textbook learning and allow you to get involved in real, meaningful research.

In the first two years of your course, you will be given a firm grounding in core physics. You'll study quantum physics, relativity, vibrations and waves, and solid-state physics, among other topics. Through your laboratory modules, you will gain the practical and communication skills that are essential for a physics graduate. You'll also have the option to take modules offered by our research groups such as astrophysics or nanophysics, or can even study topics from other departments through discovery modules.

In year 3, your work will be closely linked to current research. We offer advanced modules in areas such as superconductivity, bionanophysics, liquid crystals, particle physics and cosmology. The breadth of topics available for you to study ensures you receive a rich physics education. Students on the Integrated Masters programme will do an Advanced Experimental Techniques and Analysis module, based in our research laboratories, which prepares you for your final-year project.

On both our Bachelor’s and Integrated Masters degrees, you will complete a project in your final year. You will work as part of an internationally recognised research team on an open-ended project. This is a wonderful opportunity to take part in and contribute to the latest physics research and join one of our research groups.
**Physics with Astrophysics**

Physics with Astrophysics BSc:  
UCAS code F3F5 / Entry grades AAB / Duration 3 years  
Physics with Astrophysics MPhys, BSc:  
UCAS code F3FM / Entry grades AAA / Duration 4 years

Astrophysics encompasses study of the exciting arena of planets, stars and galaxies. On this degree, you will develop thorough knowledge of core physics while also studying a broad range of astrophysics topics, such as high energy astrophysics, stellar structure, stellar evolution and cosmology, from your very first week.

The first year introduces you to the basics of the sun, stars, galaxies and the universe, illustrated with images from the world’s top telescopes. In your second year, you’ll really get to grips with the physical and mathematical descriptions of what makes stars tick and, in the end, explode. You will also learn about some of the most energetic and enigmatic phenomena in the universe such as pulsars, gamma ray bursts and active galactic nuclei. As part of your laboratory modules, you will choose an object to observe and use the School's observatory and state-of-the-art equipment to produce a colour image.

The astrophysics modules in year three cover such exciting topics as star and planet formation, cosmology and the evolution of the universe. There is also a broad range of optional modules available to you to allow you to explore other areas of physics.

The final year of the Bachelor’s and Integrated Masters degrees involves undertaking a project where you’ll work with leading academics and contribute to current astrophysics research.

**Theoretical Physics**

Theoretical Physics BSc:  
UCAS code F3KO / Entry grades AAB / Duration 3 years  
Theoretical Physics MPhys, BSc:  
UCAS code F340 / Entry grades AAA / Duration 4 years

Theoretical physics really is about the meaning of it all. This degree will enable you to understand the revolutionary advances in theory that underpin today’s physical understanding of the world.

You will acquire a thorough knowledge and understanding of the theoretical basis of modern physics, with particular focus on the mathematical aspects. Throughout the course you will develop a firm grounding in how mathematical methods are applied to advanced topics in physics.

In the first two years of your degree, you will study core physics topics, including quantum physics, relativity and solid-state physics. Alongside this, you will explore mathematics topics such as complex numbers, vector calculus and matrices, with optional mathematics and physics modules also available. We enable you to gain an understanding of basic laboratory skills in year 1, so that you have a better sense of how experimentation and theory work together in physics.

In the third year of your degree, you can choose from a wide range of advanced optional modules from both the School of Physics and Astronomy and the School of Mathematics. In your final year, you will undertake a theory-based research project. This is your chance to work closely with a leading researcher in a current active field of research.

When you finish this programme, you will have a sound knowledge and understanding of the core observations, concepts and quantitative theoretical structures that constitute our contemporary understanding of the physical world.

For full course details, including module information, visit  
www.leeds.ac.uk/courses
STUDENT STORY

GRACE PORTER
MPHYS, BSC PHYSICS STUDENT

Whether it is in modules or through summer and outreach work, there is always something to get involved in when studying physics at Leeds.

I didn’t want to commit a year to an industrial placement, and so instead I took the group industrial project module. This module was a great way to experience a different type of research. The industrial contact gave my group a question that they wanted to answer, and we got together to research the subject and to plan a way to answer this question. Our academic contacts were really helpful in guiding our thinking towards feasible solutions, and we were able to give some interesting results to our industrial contact!

I really enjoyed being able to use the science I was taught during my degree. Doing research throughout your degree is a great way to understand that some of the most obscure concepts you learn can be applied to real-world problems.

On this course, you really get a sense that the degree is yours and the research you are undertaking is your responsibility. Whether it is through a summer project, the group industrial project module, or in your final year research project, the academic staff help you to find out what kind of research interests you and gain the skills to pursue those interests.
REWARDING CAREERS

A degree in physics opens the door to many exciting and rewarding career choices.

Physics graduates secure jobs that are among the most highly-paid and intellectually challenging available. Many of our students go on to pursue a PhD, leading to careers in both academia and exciting relevant industries. Others choose to use their skills to diversify and follow graduate schemes in engineering, finance, IT or teaching.

CAREERS AND EMPLOYABILITY SUPPORT

Throughout your time with us, our dedicated Faculty Employability Team will be there to support, guide and advise you.

We support you from your first year through to your final year with a series of employability and careers activities.

We'll help you through the career decision-making process, support you in your applications for work experience and graduate jobs, and bridge the gap between you and employers.

Our specialist, qualified staff are here to help you succeed on the path to your perfect career so you feel supported along the way.

You'll benefit from:

• Accredited careers skills development modules in second-year, to give you an insight into industrial product development or business start-up
• Timetabled employability sessions at all stages of your course
• Ongoing support to find internships and placements
• Practical help with developing a CV, making applications, and preparing for interviews and assessment centres
• One-to-one guidance or coaching appointments to focus on you and your future
• Presentations and workshops delivered by a wide variety of employers
• Events and workshops to futureproof your skills
• Institute of Physics (IoP) accreditation for all of our courses, which makes your degree more valuable in the eyes of future employers, and sets you on the path to becoming a chartered physicist.

Our Careers Centre and Employability Team organise an annual STEM Careers Fair, giving you many opportunities to meet graduate recruiters, gain an insight into graduate jobs and explore work experience, graduate and further study opportunities, giving you the best start to your career.

The University of Leeds is a top-five university targeted by employers (High Fliers 2017). Some recent employers on campus targeting physics students have included CERN, TTP, BAE Systems, The Royal Navy and Imagination Technologies.

We are also part of WRIPA (the White Rose Industrial Physics Academy) who organise collaborations between companies and physics students. Their flagship event is the annual careers fair which includes sector specific panel discussions, talks, workshops and CV clinics. Some recent employers present at the fair include IBM, CHERSOFT and National Instruments.
INDUSTRIAL PLACEMENT

All of our degree programmes include the option to complete a placement year in industry, which would be the third year of your course.

We offer flexibility, so if you’re not yet sure if a placement year is for you, you can always make your mind up when you are here, normally at the start of your second year.

Either way, from year one, you will be able to access support to enable you to make the most well-informed decision regarding your placement year search and applications.

A placement year is a great opportunity to learn new skills and knowledge, whilst putting those that you have already developed at university into practice. This is a great way to enhance your employability while getting a real understanding of what a career in industry will be like, ultimately helping you decide what kind of career you might like to follow after university.

We have a dedicated Employability and Placements Officer who will work with you during a series of placement information and preparation sessions. These sessions will inform you of the wide variety of options available to you, what to expect from the application process, and how to apply. There will also be opportunities to book one-to-one appointments to help with your placement search, as well as access to a range of placements on the University’s vacancy system.

We successfully place physics students with a range of employers. Recent examples include Siemens, Virgin Media, GSK, SP Energy Network and Xoserve Limited.

SUMMER RESEARCH PLACEMENTS

As well as external work placements, we offer you the opportunity to work on real physics projects in our research teams during the summer break.

You would work alongside physics academics for a period of six weeks, be paid a salary, and contribute to real research.

“During a summer research placement, you have the opportunity to contribute towards original, cutting-edge research. Working within the research groups on something new and exciting is a great experience for anyone who is enjoying their physics studies and can give you a real insight as to what a job in scientific research can be like.”

JAMES MILEY,
MPHYS, BSC PHYSICS WITH ASTROPHYSICS

STUDY ABROAD

All our courses give you the chance to study abroad as part of your degree.

You would typically spend your third year studying physics at a partner institution and then return to Leeds for your final year. Spending a year living and studying abroad is a unique prospect. You’ll have the chance to immerse yourself in another culture and gain unforgettable experiences.

You’ll also gain an overseas education and develop new skills that will impress future employers.

We have relationships with many international universities, representing some of the best places to study abroad across the world.

“There are loads of opportunities available both inside and outside the department. This summer I went to Korea for a Leeds study abroad summer school and had a really amazing time.”

ROSIE SUMPTER,
STUDY ABROAD SUMMER SCHOOL IN KOREA
LEEDS IS A GREAT PLACE TO LIVE AND LEARN

Leeds the city

Leeds is a large city which offers the best of both worlds. As well as being a vibrant, affordable and multicultural city, it’s also surrounded by some of the most beautiful, accessible countryside in the UK.

At the University of Leeds we guarantee an offer of accommodation for your first year, providing you apply by the deadline.

We offer a wide variety of quality accommodation, from modern, purpose-built developments to more traditional residences in a variety of locations from the heart of campus and city centre to leafy suburbs.
ARTS AND CULTURE

Leeds has been described as a ‘hotbed of creative cultural talent’ and enjoys a reputation for producing spectacular and innovative shows. It’s the only UK city outside London to have its own opera and ballet companies and boasts several theatres.

SPORT

Leeds has a great sporting tradition and was chosen as the host city for Le Grand Départ, the start of the 2014 Tour de France. The city is home to some great sporting teams, including Leeds United Football Club and Leeds Rhinos rugby league and Yorkshire Carnegie rugby union teams. Leeds is also home to Yorkshire County Cricket Club and international Test Match cricket.

SHOPPING

The opening of the new Victoria Gate shopping centre makes Leeds one of the largest shopping destinations in the UK outside London. From the beautiful architecture of the Victoria Quarter and the Grand Arcade to the stunning domed roof of Leeds Corn Exchange, Leeds is a true haven for anyone who wants to shop.

FOOD AND DRINK

You’re never far from a fantastic restaurant, café or pub, whether you’re in the city centre or one of the popular student suburbs. Many have special deals for students or early-bird menus, ideal for a student budget.

NIGHTLIFE AND MUSIC

Leeds’ nightlife is legendary, with clubs and bars offering music to suit all tastes. There are lots of live music venues in the city, including the 13,500 capacity First Direct Arena, the O2 Academy and Brudenell Social Club.

EXPLORING YORKSHIRE

At the heart of Yorkshire, Leeds is one of the greenest cities in Britain and within easy reach of traditional towns and cities such as York, Ilkley, Harrogate and Saltaire, as well as Yorkshire’s stunning coastline. The spectacular countryside surrounding Leeds – including the Lake District, the Peak District, the Yorkshire Dales and the North York Moors – provides the ideal environment for University groups and societies taking part in everything from caving and kayaking to cycling and walking.

CONTACT US

If you require any more information about our courses, modules, or any other aspect of studying physics at Leeds, please contact our Undergraduate Admissions Team.

Tel: +44 (0)113 343 3881
Email: physics.admissions@leeds.ac.uk
www.physics.leeds.ac.uk
ENTRY REQUIREMENTS

Our entry requirements range from AAA to AAB at A-level, depending on which course you choose. Physics and mathematics must be among your A-level subjects. Where an A-level science subject is taken, we require a pass in the practical science element, alongside the achievement of the A-level at the stated grade. Excludes A-level General Studies or Critical Thinking.

We also accept a variety of alternative qualifications (check our website for details).

ENGLISH LANGUAGE REQUIREMENTS

GCSE English language grade C (or above) or an equivalent recognised English language qualification, e.g. IELTS 6.0 overall with no less than 5.5 in each element.

ACCESS TO LEEDS

We’re committed to identifying the best possible applicants, regardless of personal circumstances or background.

Access to Leeds is an alternative admissions scheme which accepts applications from individuals who might be from low income households, in the first generation of their immediate family to apply to higher education or have had their studies disrupted.

For more details visit www.leeds.ac.uk/a2l

HOW TO APPLY

All undergraduate applications should be made through the Universities and Colleges Admissions Service (UCAS).

Full instructions on how to apply are available at www.ucas.com

OFFER PROCESS

Suitable applicants will be invited to an applicant day, which gives you the opportunity to meet our academic staff and students, enjoy a tour of our facilities, view student accommodation and find out more about your course.

We like to interview applicants before making an offer, so the day will also include an interview with one of our academics. This will give you the chance to discuss your application in more detail, check that it’s the right course for you and your career plans, have your questions answered and find out more about studying at Leeds.

SCHOLARSHIPS

The University of Leeds has a long-standing history of helping students to manage their finances while at University, with a comprehensive range of bursaries and scholarships available.

For more information, visit www.physics.leeds.ac.uk/undergraduate/scholarships.html

CONTACT US

If you require any more information about our courses, modules, or any other aspect of studying physics at Leeds, you can contact our Undergraduate Admissions Team, go online or follow us on twitter (@scienceleeds)

Tel: +44 (0)113 343 3881
Email: physics.admissions@leeds.ac.uk
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