Welcome

I am proud to be head of one of the top physics departments both for physics education and for research in the UK.

Based on our broad range of world-leading research, we provide flexible and engaging degrees that allow our students to experience the full fascination of the subject. Through project work, extracurricular activities and an open-door policy, we offer a unique and inclusive study experience with degree programmes and pathways that are constantly evolving along with the frontiers of the discipline. Our Department plays a significant positive role in science and society and has contributed to Nobel prize winning research with colleagues at international facilities such as CERN, the Laser Interferometer Gravitational-wave Observatory and the Sudbury Neutrino Observatory, discovering new galaxies, setting low temperature records, or by creating new materials and quantum devices. We go beyond traditional research to apply physics in an impactful manner, for example, we repurposed our software to prevent forest fires, apply identification techniques to aid disaster relief, and regularly provide outreach events for the community. In all these activities, our students have many opportunities to be involved.

I hope that this subject brochure will be the beginning of your own rewarding journey leading to a deeper understanding of our world.

Professor Roger Jones
Head of Department
What can you expect?

**Flexible degrees**
All our single honours subjects have a common first year, meaning you will benefit from exploring all areas of physics, and you can change your degree specialism up until the end of your first year.

**Research-led teaching**
Teaching is directly informed by our world-leading, experimental and theoretical research. You will benefit from expert lecturers, engaging projects and access to state-of-the-art facilities.

**Supportive department**
We build a diverse and supportive community, with dedicated academic advisors, a disabilities officer and an open-door policy. It means there is always someone to support you through your studies.

A supportive environment

First of all, thank you for taking the time to learn about Physics at Lancaster. My name is Jon Prance and I am the Director of Teaching. I also do research in Low Temperature Physics and Quantum Nanotechnology. My goal is to cool tiny electronic circuits to the lowest possible temperatures and build devices that use quantum mechanics to do otherwise impossible things. I love sharing my research with students through project work and lectures, and this is something we do throughout our degrees.

Our degree schemes are closely aligned with the research in the Department. Some of our degrees offer pathways that allow you to specialise in particular areas of physics, such as ‘Quantum Technology’ and ‘Astrophysics with Space Physics’. As you move through a pathway, from year 2 through to graduation, more of the content you study will be focused in your chosen area.

We strive to provide a supportive and friendly learning environment for all students. Approachable lecturers and dedicated academic advisors help to guide you through your studies. We also know that regular, helpful feedback is essential in developing your understanding and confidence. All of our degrees include regular coursework assessments as well as practical work and projects. These encourage you to put what you have learned into practice and gain feedback on how to improve.

Deciding where to study is obviously an important choice and also a very personal one. If you do apply to Lancaster, I think you will find a welcoming environment and staff who are committed to supporting you through your degree and onwards into your future career.

Dr Jonathan Prance
Director of Teaching

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#3 for student satisfaction
Complete University Guide 2022

#3 in the UK for Physics
in the Guardian University League Tables 2022

98% of our research outputs rated world-leading or internationally excellent (REF 2021: Physical)

Open-door policy
We operate an open-door policy, meaning help is never far away as you can ask our staff for help when you need it.

Continuous feedback
We continually provide academic feedback and keep you informed of your results. A very large part of your lab, project and coursework counts towards your final degree mark – this allows us to make the assessment meaningful, in recognition of the fact that in-depth scientific research requires time.

As a rough guide, 40-50% of your degree marks will be based on this continuous assessment, with the remainder based on exams.

High-quality contact time
In a typical week during your first year, you will have 8-12 hours of lectures and workshops, 3 hours of seminars and 3 hours in a lab. In later years, the balance between lectures, seminars and lab work will change depending on your chosen degree specialism. You will work closely with other students and staff in laboratories, have the opportunity to have solutions explained and receive any support you may need. You will participate in demonstrations of the physical phenomena described in lectures, learn to use scientific equipment and develop skills in taking measurements, drawing conclusions and writing reports.

You will also carry out extensive research projects, first in groups and then under individual supervision, where you apply your knowledge and actively contribute to the development of the field.

For more information please visit lancaster.ac.uk/physics
In the Physics Department we foster an inclusive and friendly community and are proud to get you involved to make sure you can get the most out of your time here. Here are just a few ways you can become involved outside of your degree.

**Societies**

The Physics Department has two societies that you can get involved in.

**The Physics Society (LUPhyS)**
You’ll be welcomed into an inclusive society that focuses on our Physics Department family. From annual events such as our Christmas dinner and summer BBQ, to games nights, evenings out, academic talks and our football team, there’s something for everyone to get involved in.

**The Lancaster University Astronomy Society (LUAstroSoc)**
For keen astronomers and beginners alike, this society provides you with the opportunity to use our telescopes when the weather is clear, weekly group meetings with seminars given by students and space themed social events.

**Student Ambassadors**

We regularly recruit Student Ambassadors to provide support to the Department with recruitment events such as Open Days and Interview Days and work with outreach and engagement to encourage others to learn about physics. This is a great way of sharing your passion and experience and developing your skills whilst earning money.

**Student reps**

You can become a student rep for a number of committees, such as, the Staff and Student Consultative Committee and the Safety Health & Welfare Committee. By doing so you are becoming the voice for your peers and helping shape the Department for you and the generations to come.

**Inclusivity**

We proudly promote inclusivity within the Physics Department and have both the Athena SWAN Silver Award and the IoP Juno Champion status. We also have an Inclusion in Physics group which meets regularly and arranges seminars and provides forums for members to share their experiences and discuss career and research options.
When did you know Physics at Lancaster University was the place for you?

When I came for my interview, I was so nervous about it, hoping I'd know enough physics to impress the interviewer. Everyone was so nice, and the campus was so pretty, I knew straight away that this was the university I wanted to go to.

What does the facilities so great?

How open everything is. I never felt shy to go to one of the many study spaces and work on some questions or go to an academic’s office to ask for some help (or even just for a chat). I think it's important for students to feel comfortable where they work and the Physics Building excels at creating that atmosphere.

What is your favourite aspect of your course?

The fact that there are so many different aspects of my course. There's Coding and Astrophysics, Mathematics and Theoretical Physics. I like the idea of waking up every day almost doing something completely new but that I still find really fascinating. Also, I really enjoy the collaborative aspects, me and my friends working on the coursework together have created some of my most fond memories of my time here.

What are you going to do after your degree?

I hope to continue in the line of physics, something hands on that I find equally as exciting as my current course if not more. Physics at Lancaster has shaped me to be able to go on and effectively do whatever I want so the sky's the limit really.

What do you like about Physics at Lancaster?

Overall, I like how much fun it is to work here. The coursework is challenging yet manageable, the people are delightful, and the scenery and atmosphere of Lancaster are just divine. I feel like I'm genuinely friends with some of my lecturers which makes life in the Department for me just that bit more enjoyable. We also learn some absolutely fascinating things in our lectures from the tiniest quark to the most massive of stars, it makes physics feel like the study of everything for everyone.

For more information please visit lancaster.ac.uk/physics
Equipped to achieve

You will benefit from our unique and world-leading research facilities. This includes specialist equipment and materials in our Quantum Technology Centre, IsoLab and Ultra-Low Temperature Lab. You will also have access to a wide range of learning resources, from our own computer suites and new teaching laboratories to the 365mm Schmidt-Cassegrain reflecting telescope.

We also have direct involvement in international collaborations such as the Large Hadron Collider at CERN, T2K in Japan, space science experiments inside the Arctic and Antarctic circles, and NASA’s Cassini-Huygens space mission.

These provisions significantly enhance your research projects, allowing you to use cutting-edge equipment on-site and providing research data from international facilities.

For more information please visit lancaster.ac.uk/physics
What attracted you to study Physics at Lancaster University?
Lancaster’s strong position in university league tables, particularly in the student satisfaction area, really stood out to me when looking at universities. The research-led teaching and flexible degrees schemes also stood out to me as I was still unsure at the time on what part of physics to specialise in.

When did you know it was right for you?
I knew Lancaster was the place for me after speaking to Student Ambassadors and academics at the Interview Day. Everyone I spoke to was really welcoming and friendly, which left me comfortable and excited about coming here. The emphasis on supporting students, shown by the open-door policy and continuous academic feedback, was also a big factor in me choosing Lancaster.

Did you visit the Department? What were your thoughts?
I was really impressed by the amount of study spaces available for students in the Department. I also liked how close the study spaces were to the staff offices, meaning that help was only down the corridor if I had any questions.

What has been your favourite aspect of your course so far?
My favourite module has been the Industrial Group Project, where I worked in a team tasked with solving a problem for a company. My team had to test the motion and temperature sensors of a robot to determine if it was suitable for Martian exploration in the future. The experience has taught me many transferable skills, and I enjoyed working with three others towards the same goal.

What do you do in your spare time?
I’m part of the ABACUS society where I socialise and do fun activities with other British-born Asian students at the University. I also like to play pool at the college bars and in town. On Wednesdays, I take part in “physics football” which is a huge game of football comprised of physicists and friends. The level is not too high which suits me very well!
The place for the researcher

We are active in a wide range of research areas, and teaching on our degrees is directly informed by our world-leading, experimental and theoretical research. Our staff include many leading authorities, and work with world-leading facilities.

Research in our Department is structured into four major research areas:

Astrophysics
Particle and Accelerator Physics
Experimental Condensed Matter Physics
Theory

For more information please visit lancaster.ac.uk/physics

Astrophysics
We use space- and ground-based observations and experiments, as well as theory and modelling, to tackle important open questions in Astrophysics, Cosmology, Space Physics and Planetary Physics. Our research spans topics from space weather in the solar system through to galaxy formation and the evolution of the Universe from the earliest times to the present day.

Particle and Accelerator Physics
We study the forces and interactions that shape our Universe, conduct searches for new particles, and build the technologies and mathematical models that will be needed for future generations of particle accelerators. We are striving to answer fundamental questions such as why particles have different masses and why the Universe is made of matter and not anti-matter?

Experimental Condensed Matter
We perform experiments at temperatures close to absolute zero, build and operate nanometer-scale electronic, optical and mechanical devices, study new materials, and seek to understand the dynamic behaviour of biological systems. By working with industrial partners and startup companies, we are developing new technologies for imaging, sensing and information security.

Theory
Our research concerns the theoretical properties of condensed matter systems and molecular-scale devices, and the development of new mathematical techniques to predict the classical and quantum behaviour of light and matter. By studying systems ranging from artificial materials to ultra-intense plasmas, we seek to advance the mathematical descriptions that underpin our understanding of the physical world.
Becoming the researcher

Our courses are designed to link strongly to our research - providing an up to date physics education that is engaging and inspiring to our students and contributes to excellent student-staff relations. As a Lancaster student you will benefit from this, not only through the wide choice of optional modules and research projects, but also from the enthusiasm and expertise of our staff in these subjects.

Throughout your degree you will have the opportunity to undertake exciting research projects, solving a real problem on a topic of your choice whilst being supervised by expert researchers.

You will complete a succession of projects, commencing with a computer project in second year and progressing to open-ended research projects of increasing complexity in the following years. This includes a group project on a current research topic in third year, and an extensive, individually supervised research project in the final year of the MPhys/ MSci programmes.

The topics are closely connected to our broad portfolio of world-leading research, and provide you with an opportunity to make an active contribution to actual research.

Research Specialisms

- Observational Astrophysics
- Theoretical Particle Cosmology
- Space and Planetary Physics
- Experimental Particle Physics
- Accelerator Physics
- Low Temperature Physics
- Quantum Nanotechnology
- Nonlinear and Biomedical Physics
- Condensed Matter Theory
- Mathematical Physics
- Theory of Molecular-Scale Transport

Exciting research projects

Recent third year group projects include:

- **Particle physics:** studies of cosmic rays, construction of low-cost radiation detectors and studies of particle interactions
- **Industrial projects:** student teams worked with external organisations to investigate re-condensing gas-based anaesthetics to reduce waste, testing high-tech plastic films to improve the shelf-life of food and characterising technical non-woven fabrics for magnetic shielding
- **Cosmology group project:** solving the Age of the Universe problem using the Cosmological Constant or Dark Energy. Using satellite data to pinpoint the characteristics of Dark Energy
- **Theory and theoretical physics with mathematics group project:** cellular automatons for modelling the spread of covid-19, machine learning, simulating quantum computers, chaos and topology
- **Astrophysics:** working with brand new data taken with the Hubble Space Telescope, the Very Large Telescope in Chile and the Isaac Newton Telescope to discover and study new galaxies, to determine physical properties of stars and star clusters or to unveil the last major transition of the Universe: the epoch of re-ionisation

Recent MPhys projects include:

- Physics for healthcare
- Novel nanoscale detectors
- Modelling of stellar winds
- Studies of the Earth’s aurora
- Studies of Saturn’s ring current and aurora
- Topological defects in rhombohedral graphite
- Quantum effects in curved spacetime
- Model-building cosmic inflation
- Particle physics with the ATLAS experiment
- Neutrino interactions in the T2K near detector
- Development of future neutrino experiments
- Studies of exotic atoms using quantum Monte Carlo simulations
- Galaxies and dark matter
- Superfluid wind tunnel
- Galaxy formation and evolution across cosmic time

For more information please visit lancaster.ac.uk/physics
Opportunities for you

You will have the opportunity to take part in The Physics at Lancaster Annual Conference and Exhibition (The PLACE). It is a relaxed and fun conference for our final year students, held at the end of summer after final year exams so you can fully embrace the conference experience.

Following your project, you write up your results, create a poster and present your work to your fellow students and staff. To help with this, you are taught research and communication skills, including poster design, in the final year project module. It offers you a chance to develop presentation and communication skills in a friendly atmosphere and get a feel for presenting to a large group of people, something you may well need to do when you enter the workplace.

Embedding employability in the curriculum is a key aim of the department. As part of The PLACE we run an employer’s exhibition, where we invite industry partners and local companies to join us at the conference. This provides a great opportunity for you to present your work to companies, hear talks from the employers, and talk with them about opportunities after your degree. Employers join us from a wide range of areas from energy and education to healthcare and navigation.

Emma’s PLACE Experience

Emma Marshall
PhD student ATLAS, CERN

The PLACE was one of the highlights of my undergraduate degree at Lancaster University. As someone who came to university very shy it was something I was a bit worried about, but having spent time working on the projects I presented about I ended up really excited to talk about them! The work you do throughout the year prepares you well to present your results, and often I found I had to make sure I wasn’t talking about it for too long!

The physics department did a really good job of emulating a conference environment for the PLACE without being too intimidating. Being in a familiar lecture theatre helped put me at ease while presenting to 100+ people about my research. It really gave me a flavour of what it would be like to present results in an academic environment and extra confidence that I could do this in a PhD! It was also really interesting going to my friends’ presentations and learning more in depth about what they had been doing in their projects, as well as looking at the Master’s project posters and chatting to people about their poster and research.

For more information please visit lancaster.ac.uk/physics
Preparing you for your next step and helping you achieve good employment prospects is paramount for the Physics Department. Our graduates find employment in high-technology industries, medical and telecommunication businesses, computer programming, public health and teaching programmes, as well as in consulting, finance and accountancy and further research.

**Transferable skills**
Our degree schemes will develop your transferable skills such as critical thinking, problem solving, numeracy, computational skills, communication skills, and team working, which are all highly valued by both employers and academia.

**Employability Champion**
Our dedicated Employability Champion provides individual support, organises trips to careers fairs and runs the Employability Booster programme. This is designed to help you achieve the career you want and prepare you for your future.

**Internships**
Each year we offer a number of internships for our students, which will give you a relevant work experience and the opportunity to apply your academic knowledge in real-world situations.

**Industry and placements**
You will benefit from our direct links with industry and outside agencies, which contribute to the range of our third and fourth year projects and fund departmental research.

**What else?**
You will have ample opportunities to further enhance your CV, for example, acting as a Student Ambassador, taking part in outreach activities, or by joining student societies and participating in the University’s Lancaster Award. You will also take part in The Physics at Lancaster Annual Conference and Exhibition (PLACE) which gives our students the valuable experience of presenting their work to an audience.

**Ben Frondigoun**
4th Year MPhys Theoretical Physics

**When did you know Physics at Lancaster University was the place for you?**
I remember leaving my interview day and feeling a huge sense of community within the Department which I hadn’t seen elsewhere, and I knew that was something I wanted to be a part of with my studies.

**What makes the facilities so great?**
The Department has a huge amount of space for students to work, from the atrium to the breakout rooms to specialist spaces like the Astro lab. As a theorist who spends very little time in labs, it’s nice to be able to come and work in such an open environment.

**What is your favourite aspect of your course?**
The huge amount of project work in the degree from second year and beyond is something I’ve enjoyed massively. Be it working individually or in a group, I’ve had many opportunities to produce exciting original work throughout the degree.

**What are you going to do after your degree?**
In September, I will be starting a graduate scheme as a software engineer with an international company.

**What do you like about Physics at Lancaster?**
For me, the community is the biggest appeal of physics at Lancaster. On top of the incredibly high quality of education and facilities, I feel like I’ve got to know a huge number of great people through the Department, with everyone always looking to help each other.
The right degree for you?

Accredited by the Institute of Physics (IoP), all of our degrees provide you with a comprehensive education, and cover all the general and specialist skills valued for further study and employment in the private and public sectors.

3 or 4 years?

We offer a choice of 4 year MPhys Hons degrees and 3 year BSc Hons degrees. Providing you are meeting academic requirements you can easily transfer from 3 to 4 years up until term 2 of your third year. The additional year in the MPhys degrees contains an extended research project, which is ideal if you are considering studying for a PhD in the future or aiming at a research-based career outside academia.

More maths?

We also offer a BSc/MSci degree in Theoretical Physics with Mathematics, taught jointly with the Department of Mathematics and Statistics. This means that there is extra maths content, and you will also receive extra support from the Department of Mathematics and Statistics.

Single honours

All our single honours courses share a common first year and you can switch degree schemes up until the end of first year. This means that if you’re not sure yet which course is best for you, you only need to submit one application.

Study Abroad?

If travel is appealing to you we also offer a Study Abroad option with all of our 4 year degrees where you can spend your third year studying at a partner institution overseas.

Scholarships

The Physics Department rewards excellence by providing an academic scholarship of £1,000. This is open to applicants who choose one of our Physics MPhys/MSci degrees as their firm choice and achieve A*A* in A level Mathematics and Physics with a strong third A level (or equivalent grades for those with alternative qualifications) and strong performance in their first-term exams at Lancaster. Eligibility for the scholarship is subject to an interview during the application process.

Lancaster University offers a range of additional scholarships and bursaries, see www.lancaster.ac.uk/ug/finance.

For more information please visit lancaster.ac.uk/physics

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For more information please visit lancaster.ac.uk/physics
Physics is our broadest degree covering a range of topics. This gives you the most flexibility to tailor your degree to suit your interests.

Our Physics degree equips you with the broad conceptual and practical working knowledge of modern-day physics that underpins present-day research. The specialist teaching is informed by our research activities in areas such as particle physics and quantum technologies. This is combined with key transferable skills enabling you to embark on a wide variety of career paths.

The core curriculum includes subjects such as Quantum Technology and Particle Physics or Particle Physics with Cosmology in your first year, Quantum Mechanics and Relativity in your second year, and Particle Physics, Atomic Physics and Condensed Matter Physics in your third year. This is complemented by laboratories where you will perform state-of-the-art experiments with sophisticated equipment and associated software.

In second year you can choose one of the following pathways to match your specific interests and guide your selection of more advanced optional modules:

- **Quantum Technology**, this emerging field of research uses the unique properties of quantum mechanical systems to build better sensors, more secure communication systems and new ways of processing information.

- **Particle Physics or Particle Physics with Cosmology**: our particle physicists work with state-of-the-art particle accelerators to investigate and identify the nature of space and time. Project work is carried out in both your second and third years, and in the final year of the MPhys, you will complete an extended investigative project. You can use experimental data from the Large Hadron Collider at CERN, or various neutrino experiments around the world, or undertake experiments in one of our leading research groups with access to our state-of-the-art facilities.

Physics with Astrophysics

Supernovae, black holes, and distant galaxies - there is much to discover, and it holds the key to our existence.

This degree develops your understanding of the relationship between the physical laws of the Universe and the astrophysical and cosmological domains. The specialist teaching is informed by our research activities in observational astrophysics, space and planetary physics, and theoretical cosmology.

You will obtain a thorough grounding in core physics areas such as Quantum Physics and Electromagnetism in your first year, Quantum Mechanics and Relativity in your second year, and Particle Physics in your third year.

In your second year you can choose from focused pathways to match your specific interests and guide your selection of more advanced optional modules to help prepare you for future study or a career in your chosen area. The three available pathways are

- **Astrophysics**
- **Astrophysics with Cosmology**
- **Astrophysics with Space Physics**

You will complete an extended research project on topics such as:

- **Galaxy formation and evolution across cosmic time**
- **Dark energy**
- **Saturn’s magnetosphere**
- **Binary variable stars**
- **Cosmic radio noise**
- **Gravitational waves and cosmic inflation**

For your project work, you can use data from a large range of space and ground based observatories including the Hubble Space Telescope, NASA’s Cassini-Huygens mission, and the ESO Very Large Telescope.
Theoretical Physics

Courses
- MPhys (F321)
- BSc (F340)

Entry requirements:
- A levels: AAA inc A in Physics & A in Maths
- International Baccalaureate: 36 points with 16 from 3 HL subjects including 6 in Physics and Maths.

“Quite possibly the most astonishing aspect of the world around us is that so much of it can be understood by using a small number of physical laws.

Our theoretical physicists devote themselves to uncovering the most appropriate mathematical laws for deducing the essence of physical phenomena on all scales, from the quantum world of microscopic matter and nanomaterials to the geometry of curved space-time and the large-scale structure of the cosmos.

The core curriculum includes subjects such as Quantum Physics and Electromagnetism in your first year, Quantum Mechanics and Relativity in your second year, and Particle Physics, Atomic Physics and Condensed Matter Physics in your third year. In addition, in second and third year you take specialised modules on Quantum Theory, Electromagnetism, Condensed Matter Physics, Gravitation and Cosmology, and Elementary Particle Physics.

You also have a choice of options such as Quantum Information and Matter at Low Temperatures and carry out a group project on a topic of current research such as Machine Learning, Cryptography and the Spread of Infectious Diseases.

In the final year of the MPhys degree, you take further advanced options including Quantum Field Theory, and carry out your individual investigative research project on a topic such as Quantum Computation, Graphene, Quantum Optics, Gluonium or Axion Electrodynamics.

“I love helping students with their first taste of open-ended research, and enjoy the wider range of topics that we cover. The students’ enthusiasm is infectious, and it never fails to amaze me how far a group can progress with their research by supporting each other and working together.”

Professor Ed McCann
Theory Group Project Supervisor

For more information please visit lancaster.ac.uk/physics

#5 Joint 5th for teaching quality in Physics
The Times and Sunday Times Good University Guide 2022

Theoretical Physics with Mathematics

Courses
- MSci (F3G1)
- BSc (F3GC)

Entry requirements:
- A levels: AAA inc A in Physics & A in Maths
- International Baccalaureate: 36 points with 16 from 3 HL subjects including 6 in Physics and Maths.

“Taught jointly with the Department of Mathematics and Statistics, this degree combines specialised theoretical physics with pure mathematics, creating a challenging and rewarding programme.

You will be equipped with an understanding of the mathematical foundations of physics; for example, you will learn how quantum mechanics is underpinned by the powerful mathematical concept of a Hilbert space.

In your first year you will cover the core of physics in modules such as Quantum Physics and Electromagnetism, and the core of mathematics including Geometry and Calculus, Numbers and Relations, and Probability.

In second and third year, the core physics modules are complemented by modules from the Theoretical Physics degree and mathematical topics such as Group Theory and Differential Equations. You will also carry out a group project on a topic of current research such as Machine Learning, Cryptography and the Spread of Infectious Diseases.

In the final year of your course you will take advanced options such as Quantum Information, Quantum Field Theory, Advanced Relativity and Gravity, and complete your extended research project on a topic such as Quantum Computation, or Geometry and Electrodynamics.

“I enjoy sharing my passion for theoretical and mathematical physics with students. Theoretical Physics with Mathematics perfectly combines the rigours of mathematics with deep questions in theoretical physics giving our students the tools they need to push the boundaries of quantum mechanics, general relativity and beyond.”

Dr Jonathan Gratius
Theoretical Physics with Mathematics Degree Scheme Manager

For more information please visit lancaster.ac.uk/physics

#3 for Student Satisfaction
The Complete University Guide 2022

Joint 5th for teaching quality in Physics
The Times and Sunday Times Good University Guide 2022
Global experiences

You have the option to study abroad with any of our programmes during your time here at Lancaster.

A year studying at a university abroad provides a unique opportunity to broaden your educational experience and study of physics within a different academic and cultural context. We have opportunities in the USA, Canada, Australia, Asia or Europe.

If you choose this option you will spend your third year studying at one of our partner universities, taking modules equivalent to those that you would have taken at Lancaster. In addition, you may also have the option of choosing topics not delivered at Lancaster.

We will support you throughout the process and offer advice on matters concerning your trip. Being able to travel, experience new cultures, make new friends and boost employability means the majority of our students find it a hugely positive experience.

If you wish to study MSci Theoretical Physics with Mathematics Abroad, you should select Theoretical Physics with Mathematics (Study Abroad) (F3G9). If you wish to take any of our other courses, you should select the MPhys Physics (Study Abroad) (F305) degree scheme and let us know in your personal statement which course you prefer.

Tell us about your time studying abroad

I spent my third year at the Australian National University in Canberra which was an incredible opportunity. There was massive flexibility in module choices and degree scheme, making this a seamless experience - I mixed-and-matched advanced courses in quantum mechanics and nonlinear physics, with a reading project in group theory and modules heavily based on research-based laboratories, including building a Mach-Zehnder interferometer to measure the hyperfine energy levels of cesium. Being in the Southern Hemisphere, I was able to see different constellations over the course of the year, and travel for an extended period during their summer (our winter) up the East coast of Australia up to the Daintree Rainforest and Cape Tribulation, Cambodia, Indonesia, and Vietnam.

What are you doing after your Physics degree?

I am studying a PhD in Condensed Matter Theory, looking at entanglement and interactions in many-body quantum systems. Specifically, I am enrolled in the Graphene-NOWNANO Centre for Doctoral Training. Graphene is an atomic scale 2-dimensional hexagonal lattice comprised purely of carbon atoms, and is part of a much larger family of 2D materials which can be combined in various ways to create structures to different effect, analogous to Lego. A 6-month formal training element teaching the fundamentals of 2D materials, their applications, and key techniques in their fabrication, manipulation, characterisation, modelling etc. is followed by a 3.5 year research project. By virtue of the training element, these are quite interdisciplinary in general, spanning theory, proof of concept, application etc.

How did Lancaster help with that?

My continual exposure to research environments and the extensive research projects I carried out throughout my degree, both in Lancaster and abroad, helped me to make an informed decision about continuing in research and academia. I most enjoyed the balance between analytics and numerics in my Masters project – something that I continue to value! On a more practical note, my Masters project supervisor and the study abroad academic advisor Dr David Burton were very encouraging and fully supported the applications I made in my final year.

How did your studies develop your skills?

While some skills, such as computational modelling/programming techniques, are taught in specific modules, communication skills are continually developed, particularly when communicating scientific results in report writing and presenting findings to an audience.

What advice do you have for students who might be worried about having the skills to come employable?

The wide range of skills I have honed throughout my studies are highly transferable and I am confident in applying these in various situations. What is more, physics requires one to think critically, particularly about the physical interpretation and meaning of problems, which then helps in problem solving more generally – something that is desired in most jobs.
How to join us

We share your excitement for the subject and are always happy to answer any questions about our courses and the application process. Once you apply we will look at all aspects of your application and keep you well informed. We look forward to welcoming you here at Lancaster, as a student in our department.

During our admissions process, we will be mindful of the impact of Covid-19; for example, you will not be disadvantaged if you are unable to include extracurricular experiences in your personal statement.

You can apply through the Universities and Colleges Admissions Service (UCAS), find out more at www.ucas.com

Interviews

As part of the application process we will invite you to interview to determine if we are able to make an offer. If you apply for one of our 4-year courses, the interview also serves as part of the eligibility criteria for the Physics scholarship. Interviews will be run in-person at Lancaster University if conditions allow, otherwise they will be conducted online.

Ask a student

Want to know more about Physics? Interested in finding out what the social scene is like or what it’s like studying at Lancaster? Who better to talk to than our students? Chat online: www.lancaster.ac.uk/chat

Still have questions?

For more details about the Department, our degrees, or research, news and more please visit our website www.lancaster.ac.uk/physics

Or contact us:
Email: physics-admissions@lancaster.ac.uk

Follow us
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LancasterUniPhysics

We are easy to find!

By Road
From the north or south: Leave the M6 motorway at junction 33 and take the A6 north towards Lancaster. Turn right at the third set of traffic lights on the A6 into the University main entrance – Bigforth Drive.

By coach and bus
Lancaster city is on the national coach network; National Express coaches call at the University.

Local buses run from the railway station and Lancaster bus station to the University every 5 minutes on weekdays.

Further details can be found on www.lancaster.ac.uk/travel

By Rail
There are direct rail links between Lancaster and many of the UK’s major cities and airports.