Lancaster University

Physics

Undergraduate Degrees 2026

Physics is *essential* in shaping our future and that of our *planet*.

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 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.

Head of Department

Professor Roger Jones

At Lancaster University Physics Department, we offer a range of flexible degree schemes to help you tailor your learning. All of 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.

Degree title		Degree (Hons)	UCAS code	Course duration (years)	Typical A level offer (all include an A in both Mathematics and Physics)
Physics		BSc	F300	3	AAA
Physics		MPhys	F303	4	AAA
Physics (Study Abroad)	✈	BSc	F304	4	AAA
Physics (Study Abroad)	✈	MPhys	F305	5	AAA
Physics with Astrophysics		BSc	F3FM	3	AAA
Physics with Astrophysics		MPhys	F3F5	4	AAA
Physics with Astrophysics (Study Abroad)	✈	BSc	F3F1	4	AAA
Physics with Astrophysics (Study Abroad)	✈	MPhys	F3F7	5	AAA
Theoretical Physics		BSc	F340	3	AAA
Theoretical Physics		MPhys	F321	4	AAA
Theoretical Physics (Study Abroad)	✈	BSc	F341	4	AAA
Theoretical Physics (Study Abroad)	✈	MPhys	F322	5	AAA
Theoretical Physics with Mathematics		BSc	F3GC	3	AAA
Theoretical Physics with Mathematics		MSci	F3G1	4	AAA
Theoretical Physics with Mathematics (Study Abroad)	✈	BSc	F3G4	4	AAA
Theoretical Physics with Mathematics (Study Abroad)	✈	MSci	F3G5	5	AAA
Physics (with a Foundation Year)		BSc	F30F	4	CCC

✈ Study abroad

For those doing more than three A-levels or an Extended Project Qualification (EPQ), the entry requirement is AABB, including A in Physics and A in Maths, plus B or higher in your 4th A-level or EPQ. See our website for further details.

The table above shows our typical offer for A Level students. See our website for alternative qualifications such as International Baccalaureate or Extended BTEC Diplomas. Physics at A Level (or equivalent) is essential, as is Mathematics.

Made for *learning*

Study the make up of the universe at an institution that takes pride in its friendly community and fantastic research output. Take advantage of our world-leading facilities, as well as our fantastic support network, built to help you achieve excellence.

A supportive department

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

A physics community

We foster an inclusive and friendly community and are proud to hold the Athena Swan Silver Award and the IoP Juno Champion Status , underlining our commitment to gender equality. Our community is full of life, and many of our students will join one of our two departmental societies: The Physics Society (LUPhys) and the Astronomy Society (LUAstro). In addition we regularly recruit Student Representatives for a number of committees, ensuring students are able to shape their department.

Equipped to achieve excellence

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 computer suites and new teaching laboratories to the Dame Kathleen Ollerenshaw Observatory.

Our students also have access to data from international collaborations such as the Large Hadron Collider at CERN, T2K in Japan, space science experiments inside the Arctic and Antarctic circles, the Hubble Space Telescope, the James Webb Space Telescope COSMOS and JELS collaborations, and the Vera C. Rubin Observatory.

Scan for more information on our 400+ societies

Zach, *third year*

MPhys Physics with Astrophysics

When I came for my Interview Day at Lancaster, the vibe of the University really spoke to me, it didn't have a super formal atmosphere, and I felt like I would fit in. I remember really enjoying my interview and I got to chat with the lecturer about life in Lancaster as a whole, as well as how they felt about working there. After hearing what they had to say I could tell that my mind was made up. This is where I wanted to be.

The Physics Department feels like one big family, where everyone knows each other and there's a sense of camaraderie amongst the other physicists that we share our space with. The subject is challenging, however our 'Open Door Policy' makes it so much easier; it's really convenient being able to approach a lecturer in their office about a problem and being able to talk to the expert about it and gain a better understanding of the topic.

2ND

for student satisfaction in Physics and Astronomy

The Complete University Guide 2025

Photo: Orlando Prügel-Bennett

Itzel

MPhys Physics and Astrophysics

Research area: Astrophysics

> *“The projects are open-ended, allowing me to explore the specific topics I’m interested in”*

MPhys Project: The co-evolution of active galactic nuclei and their host galaxies

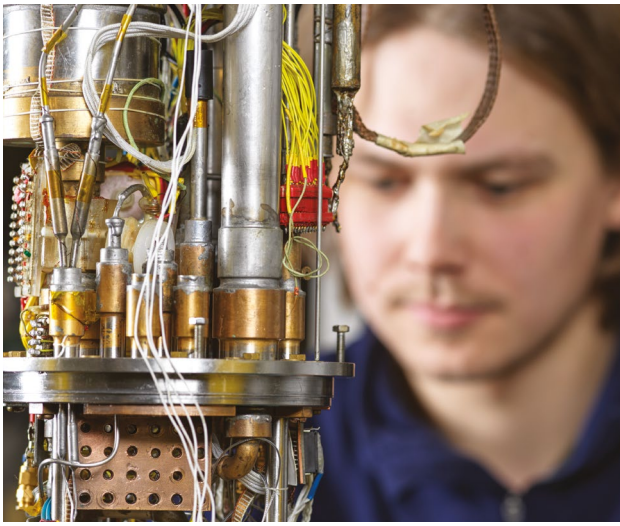
I have developed a great range of skills at Lancaster. Not only have I learned about topics that I wouldn’t have otherwise, but the friendliness from the staff members has helped me gain confidence in talking to new people.

I also really enjoyed the research aspect of my course. There is a wide range of topics to be explored and many of the projects are open-ended, allowing me to explore the specific topics I’m interested in. In my case, this is the coevolution of active galactic nuclei and their host galaxies.

In the future, I want to pursue a PhD in galaxy evolution with the intention of a long-term career in research. Ideally, I would like to do this somewhere in Europe.

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 experimental and theoretical research. Our staff include many leading authorities and work with world-leading facilities.



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, the simulation of complex systems' dynamics on quantum computers, 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

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

You will complete a succession of projects, commencing with a computer project in second year and progressing to an open-ended research project in each of the following years.

Recent third year group projects include:

+ **Particle physics:** studies of cosmic-ray particles from outer space, measurements of trace gamma radiation from a range of rock samples, and using Atlas data to replicate the Higgs Boson discovery
+ **Industrial projects:** working with external organisations to build a demonstration of a community solar panel scheme, compare simulations of radio signal strength to real-world results, and analyse conductive nonwovens for resistive heating of wind turbine blades
+ **Cosmology:** solving the Age of the Universe problem using the Cosmological Constant or Dark Energy and using satellite data to pinpoint the characteristics of Dark Energy
+ **Theoretical physics:** cellular automata for modelling the spread of Covid-19, machine learning, simulating quantum computers, chaos and topology
+ **Astrophysics:** working with data collected from the Hubble Space Telescope and the Cassini-Huygens mission to explore outstanding questions in galaxy evolution, active galactic nuclei, moon-planet interactions, and planetary aurorae
+ **Quantum technology:** simulating protocols for secure data transfer using quantum cryptography, designing an optical quantum gate, and exploration of microwave manifold multiplexing through simulation and fabrication of a microwave circuit

Recent MPhys/MSci 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
+ Neutrino interactions in the T2K near detector

The Physics at Lancaster Annual Conference and Exhibition (The PLACE)

Following your third and fourth year projects, you write up your results, create a poster and present your work to your fellow students and staff. 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 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.

4TH

in the UK for Physics

The Guardian University Guide 2025

Your global *experience*

Lancaster is a truly international university, with students and staff from over 100 different countries and partner institutions around the world. Your global experience is about living and learning with people from different cultures whether through your course, your college or your Students' Union.

Study abroad

Lancaster is a beautiful, diverse, and accessible university, with direct train routes to London, Edinburgh, Manchester, and Cumbria. But, if you fancy a trip further afield, our study abroad programme could be the one for you. 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 some unique modules otherwise not found at Lancaster. Since your time abroad plays a relatively minor role in your overall grade, you have the perfect opportunity to explore something new.

Recent Study Abroad destinations:

Nanyang Technological University (Singapore)

University of Alberta (Canada)

University of Florida (USA)

Australian National University (Australia)

University of Waterloo (Canada)

Leipzig University (Germany)

Texas A&M (USA)

“This level of support made it easy to settle into a new environment and make the most of my experience abroad”

University of North Carolina

Lancaster University

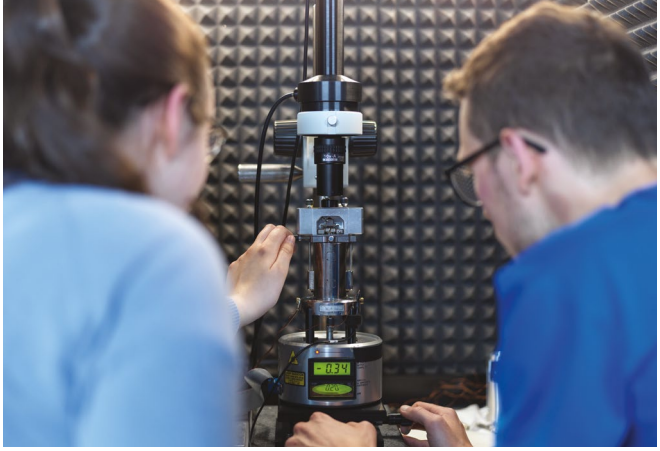
Finn, *fourth year*

MPhys Physics Hons (Study Abroad)

My time at the University of North Carolina was one of the greatest I've had. Learning in a different environment was priceless, not only for travel but also for personal development. It taught me how to adapt quickly, communicate across cultural gaps, and appreciate the subtleties of day-to-day life. There were also classes I took abroad that I couldn't take at home, for example geophysics and nuclear physics classes.

In Physics we also have a dedicated study abroad advisor who you'll talk with regularly in the lead up to your placement and whilst abroad. This level of support made it easy to settle into a new environment and make the most of my experience abroad.

If you choose to do physics with a year abroad, you'll be one of a few people with both a physics degree and international experience. This is why physics graduates are particularly sought after in a wide variety of fields, from engineering and data science, to things further afield like marketing and finance.



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.

Bachelor's or master's?

We offer a choice of 4 Year MPhys Hons Degrees and 3 year BSc Hons degrees (plus an additional year for those considering Study Abroad or the Foundation Year). Providing you are meeting academic requirements you can easily transfer from 3 to 4 years up until semester 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 School of Mathematical Sciences. This means that there is extra maths content, and you will also receive additional support from the School of Mathematical Sciences.

Interviews

Still unsure? Not to worry. As part of the application process, we will offer you the option of an interview so that you can gain first-hand experience of life in the Physics Department. The interview also provides you with the opportunity to discuss your preferred degree programme with an academic, as well as secure your eligibility for our scholarship.

Scholarships

The Physics Department rewards excellence by offering an academic scholarship for high-achieving applicants. This is open to applicants who select us as their firm choice and achieve A*A* in A Level Mathematics and Physics, plus an A or higher in a third A Level (or A Level equivalent). Eligibility is subject to an interview during the application process, and successful applicants will receive either £750 (BSc) or £1000 (MPhys/ MSci) in their first year of study.

Lancaster University offers a range of additional scholarships and bursaries, see **lancaster.ac.uk/ugfinance**.

The common *first year*

All our single honours subjects have a common first year, meaning you will benefit from exploring all areas of physics before making a decision on your specialism. With this in mind, you can change your degree scheme up until the end of your first year.

Year 1 - Physics, Astrophysics, and Theoretical Physics

The Physical Universe

This module will introduce you to the fundamental nature of physics, and teach you key skills in the use of experiment and uncertainty, units, and dimensional analysis.

Mathematical Skills 1 and 2

Here you will learn the key mathematical skills required to tackle problems in physics. To ensure all students start in the same position, you will encounter some overlap from your A Level studies. You will also begin to explore new topics like multivariate calculus, vector analysis, and series.

Experimental Physics

This module integrates lectures and laboratory work to develop essential problem-solving and experimental skills required for scientific research, engineering, and technical careers.

Fields, Matter, and Quantum Physics

This module explores electricity, magnetism, thermodynamics, and quantum physics, providing a strong foundation in classical and modern physics.

Physics Skills

This module will equip you with fundamental skills in data analysis, scientific communication, and computational techniques. You will combine theoretical concepts with practical applications to prepare you for research and professional careers in science.

Year 1 - Theoretical Physics with Mathematics (TPM)

+ The Physical Universe

+ Fields, Matter, and Quantum Physics

Matrices and Calculus

In this module, you'll examine how matrices represent transformations in space and how these transformations behave in specific directions.

Logic and Discrete Mathematics

Discrete Mathematics is the study of discrete structures, including counting problems and mathematical graphs (or networks). The language and structure of mathematical proofs will be studied, emphasising how logic can be used to express mathematical arguments in a concise and rigorous manner.

Symmetry and Sequences

Once we understand the definition of a limit in mathematics, the idea of infinity makes sense. The concept of a limit allows us to study whether a given sequence is convergent, or a given function defined on the real numbers is continuous, in a precise way.

Multivariate Calculus

In this module you will explore the world of multivariate techniques and multivariate calculus. You will deepen your understanding of vectors, angles, curves, surfaces and volumes, generalising to a d-dimensional space, and consider alternative co-ordinate systems that can simplify the expression of a model.

Contact hours in a typical week:

+ 8-12 hours of lectures, workshops and feedback sessions
+ 3 hours of labs.

Physics

BSc, MPhys

Physics is our flagship degree, where you'll find yourself exploring matter, forces, and the Universe around you. This course offers a wide range of core topics, providing you with the key skills to develop a strong understanding of advanced concepts and methods. You will also have the opportunity to tailor your degree in later years with our range of optional topics.

Key transferable skills

+ Computing and programming
+ Data analysis with physical context
+ Experimental design and laboratory skills
+ Team collaboration and project work

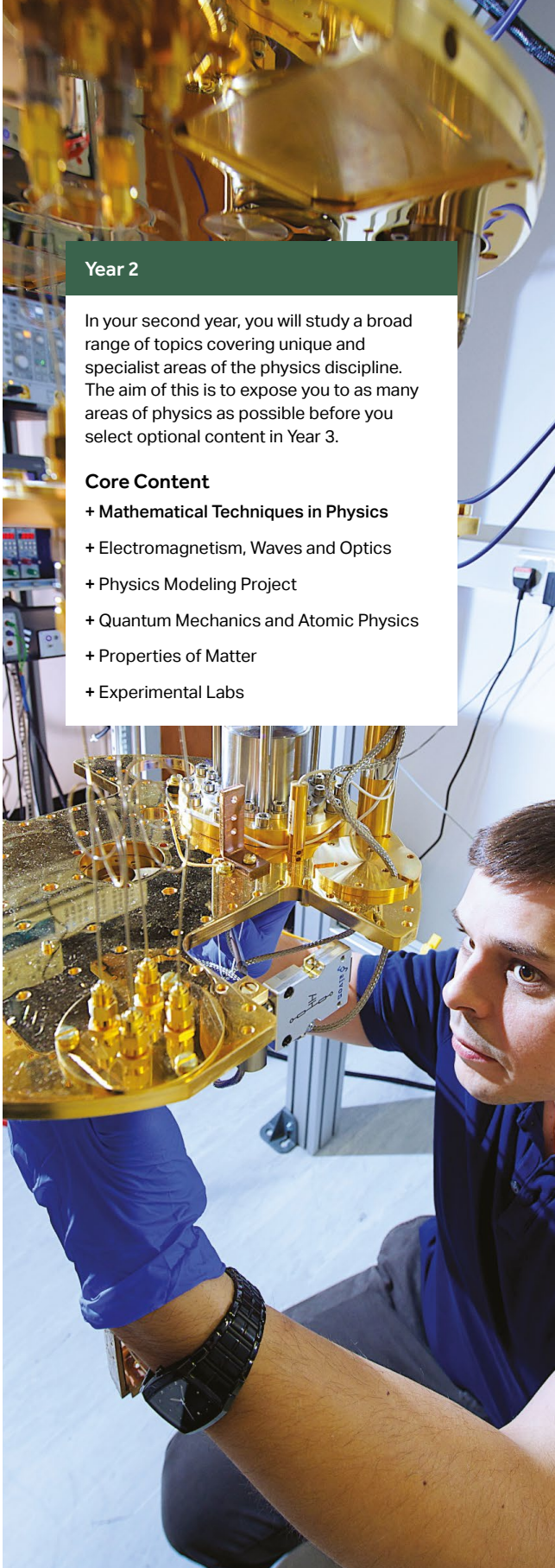
Example career pathways

+ Medical physics
+ Industrial research and development
+ Nuclear power and waste management
+ Semiconductor and optics industry

Enhancing your curriculum

We continually review and enhance our course curricula to ensure we are delivering the best possible learning experience, and to make sure that the subject knowledge and transferable skills you develop will prepare you for your future.

Information within this publication with respect to courses and modules is correct at the time of publication, and the University will make every reasonable effort to offer courses and modules as advertised. In some cases, changes may be necessary and may result in new modules or some modules and combinations being unavailable, for example as a result of student feedback, timetabling, staff changes and new research.

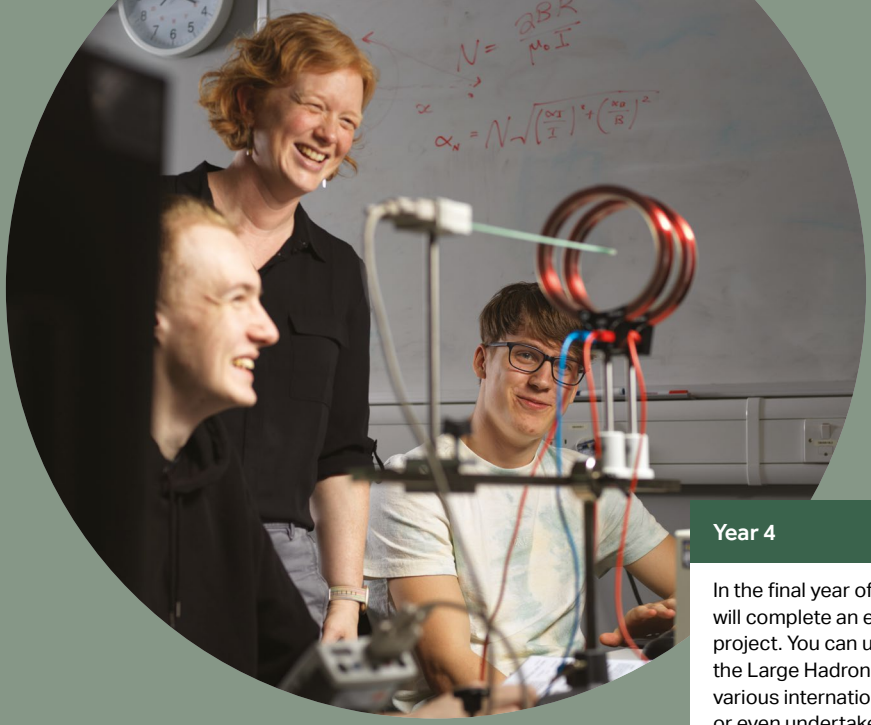


Year 2

In your second year, you will study a broad range of topics covering unique and specialist areas of the physics discipline. The aim of this is to expose you to as many areas of physics as possible before you select optional content in Year 3.

Core Content

+ **Mathematical Techniques in Physics**
+ Electromagnetism, Waves and Optics
+ Physics Modeling Project
+ Quantum Mechanics and Atomic Physics
+ Properties of Matter
+ Experimental Labs



Year 3

In your third year, you will expand your breadth of physics knowledge by choosing from a variety of optional topics. Amongst these are the Group Projects where you will apply your subject knowledge to a contemporary problem. Projects will vary from year to year, depending on the particular challenges set by our academics and industrial partners.

Core Content

+ Relativity, Nuclear, and Particle Physics
+ Problem-solving and sustainability

Optional Content

Examples currently include

+ Quantum Technology
+ Space Physics
+ Low Temperature and Semiconductor Laboratory
+ Industrial Group Project
+ Physics Group Project
+ Condensed Matter Physics
+ Further Particle Physics
+ Cosmology
+ TOPE (Teaching, Outreach, and Public Engagement)

Year 4

In the final year of the Physics MPhys, you will complete an extended investigative project. You can use experimental data from the Large Hadron Collider at CERN, data from various international neutrino experiments, or even undertake experiments with one of our leading research groups in low temperature physics or quantum technology, with access to our state-of-the-art facilities.

Core Content

+ Numerical methods and data analysis
+ Year 4 Physics Project

Optional Content

Examples currently include

+ Advanced Quantum Technology
+ General Relativity
+ Advanced Condensed Matter Physics
+ Gauge Theories, Groups, and Symmetries

Physics with Astrophysics

BSc, MPhys

Supernovae, black holes, and distant galaxies - there is much to discover, and it holds the key to our existence. Our Physics with Astrophysics course will allow you to develop your understanding of the relationship between the physical laws of the Universe and the astrophysical and cosmological domains.

Key transferable skills

+ Big data analysis
+ Advanced numeracy
+ Complex systems modeling
+ Experience with observational instruments and remote sensing

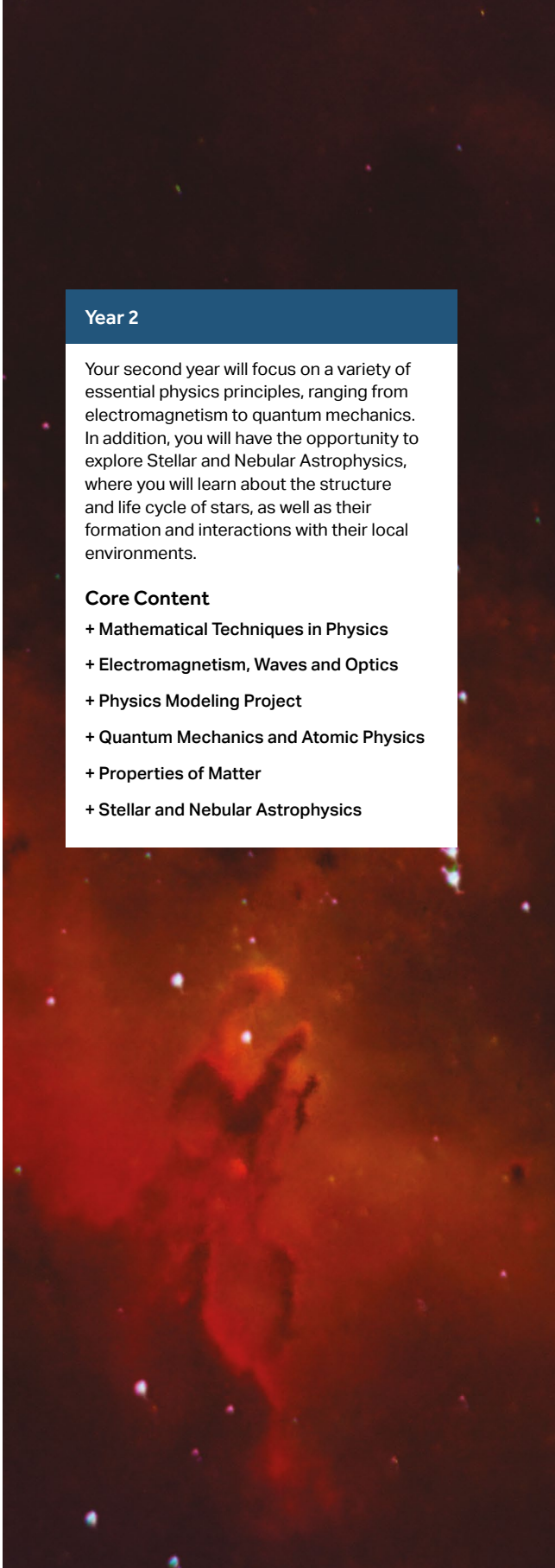
Example Career Pathways

+ Astronomy software development
+ Data science
+ Space weather analysis
+ Science communications and outreach

Enhancing your curriculum

We continually review and enhance our course curricula to ensure we are delivering the best possible learning experience, and to make sure that the subject knowledge and transferable skills you develop will prepare you for your future.

Information within this publication with respect to courses and modules is correct at the time of publication, and the University will make every reasonable effort to offer courses and modules as advertised. In some cases, changes may be necessary and may result in new modules or some modules and combinations being unavailable, for example as a result of student feedback, timetabling, staff changes and new research.

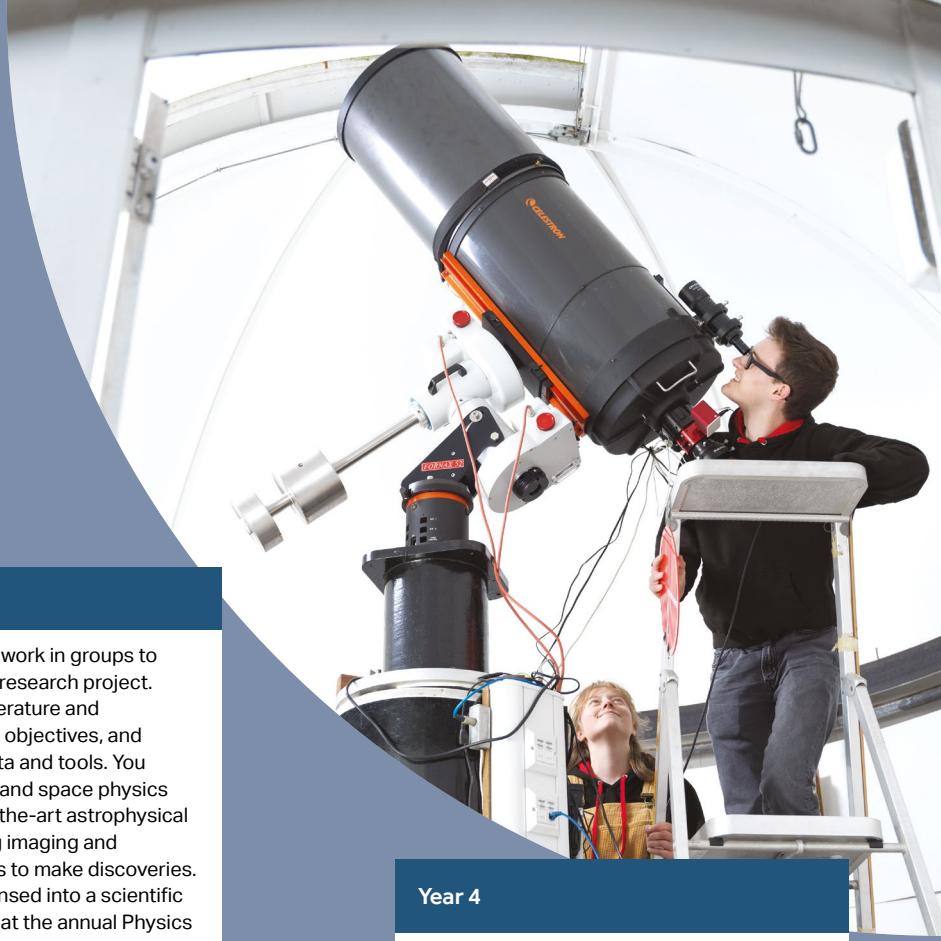


Year 2

Your second year will focus on a variety of essential physics principles, ranging from electromagnetism to quantum mechanics. In addition, you will have the opportunity to explore Stellar and Nebular Astrophysics, where you will learn about the structure and life cycle of stars, as well as their formation and interactions with their local environments.

Core Content

+ Mathematical Techniques in Physics
+ Electromagnetism, Waves and Optics
+ Physics Modeling Project
+ Quantum Mechanics and Atomic Physics
+ Properties of Matter
+ Stellar and Nebular Astrophysics



Year 3

In your third year, you'll work in groups to complete an extended research project. You will research the literature and propose your topic, set objectives, and identify appropriate data and tools. You will apply astrophysics and space physics knowledge to state-of-the-art astrophysical observations, including imaging and spectroscopic datasets to make discoveries. All of this will be condensed into a scientific report to be presented at the annual Physics student conference.

Core Content

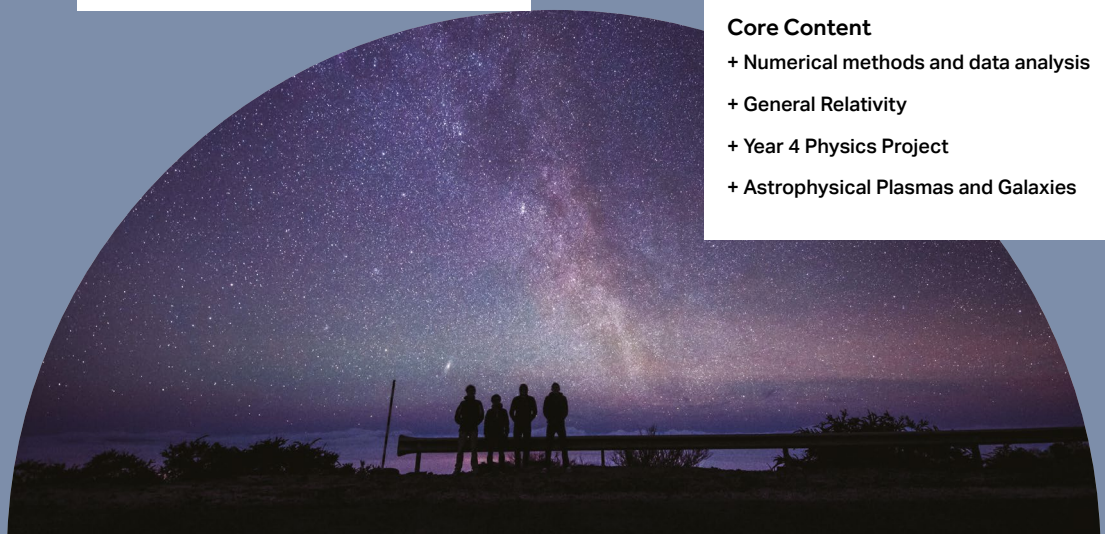
+ Relativity, Nuclear, and Particle Physics
+ Space Physics
+ Astrophysical Data Lab
+ Astrophysics Group Project
+ Problem-solving and Sustainability
+ Cosmology

Year 4

In the final year of the MPhys, you will complete an extended investigative project in an area that interests you. You could choose to analyse data from the European Southern Observatory, the Hubble Space Telescope, the Cassini mission or one of the many other state-of-the-art facilities that our world-leading researchers are involved with. Prefer numerical work? You can build or work with existing models of fundamental solar system processes such as x-ray emissions from the outer planets.

Core Content

+ Numerical methods and data analysis
+ General Relativity
+ Year 4 Physics Project
+ Astrophysical Plasmas and Galaxies



Theoretical Physics

BSc, MPhys

The world around us can be understood by using a relatively small number of physical laws. Our Theoretical Physics degree scheme gets into the thick of this, exploring the make-up of our Universe and providing you with the confidence to tackle complex problems.

Key transferable skills

+ Advanced problem solving
+ Programming
+ Project management
+ Advanced theoretical literacy

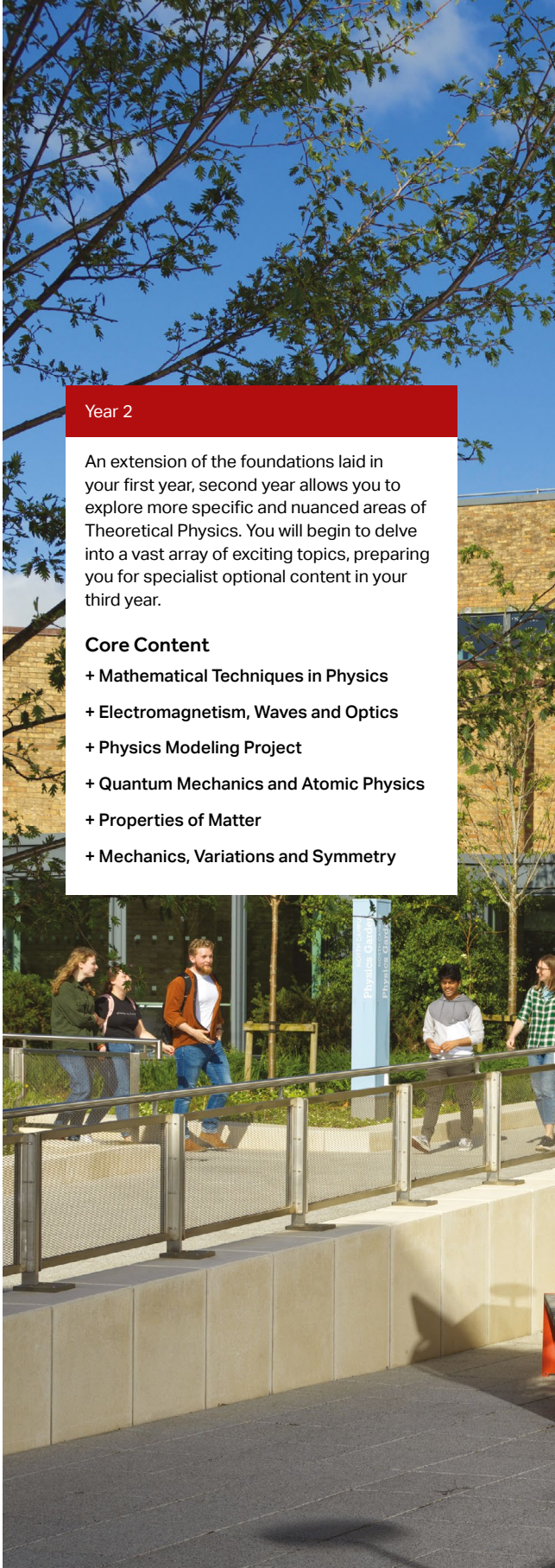
Example career pathways

+ Software engineering
+ Cryptography and cybersecurity
+ Project science
+ Data science and algorithm development

Enhancing your curriculum

We continually review and enhance our course curricula to ensure we are delivering the best possible learning experience, and to make sure that the subject knowledge and transferable skills you develop will prepare you for your future.

Information within this publication with respect to courses and modules is correct at the time of publication, and the University will make every reasonable effort to offer courses and modules as advertised. In some cases, changes may be necessary and may result in new modules or some modules and combinations being unavailable, for example as a result of student feedback, timetabling, staff changes and new research.



Year 2

An extension of the foundations laid in your first year, second year allows you to explore more specific and nuanced areas of Theoretical Physics. You will begin to delve into a vast array of exciting topics, preparing you for specialist optional content in your third year.

Core Content

+ Mathematical Techniques in Physics
+ Electromagnetism, Waves and Optics
+ Physics Modeling Project
+ Quantum Mechanics and Atomic Physics
+ Properties of Matter
+ Mechanics, Variations and Symmetry

Year 3

Our third year Theoretical Physics Group Project is popular amongst our students, as they work collaboratively to investigate a theoretical physics-based problem. This work is not tightly constrained by defined limits, allowing you to explore open-ended problems and deepen your passion for the area that interests you most.

Core Content

+ Relativity, Nuclear, and Particle Physics
+ Field Theory in Quantum Mechanics
+ Theoretical Physics Group Project
+ Problem-solving and sustainability

Optional Content

Examples currently include

+ Quantum Technology
+ Space Physics
+ Condensed Matter Physics
+ Further Particle Physics
+ Cosmology
+ TOPE (Teaching, Outreach, and Public Engagement)

Year 4

Fourth year will take your understanding of Theoretical Physics to new heights with a range of advanced topics. In addition to this, you will have the opportunity to explore an extended research project of your choice, demonstrating the ability to plan, manage, and execute an investigation.

Core Content

+ Advanced Theoretical Physics
+ Year 4 Physics Project

Optional Content

Examples currently include

+ Advanced Quantum Technology
+ General Relativity
+ Advanced Condensed Matter Physics
+ Gauge Theories, Groups and Symmetries

Theoretical Physics with Mathematics

BSc, MSci

Taught jointly with the School of Mathematical Sciences, TPM is the ideal course for those with a love of both Physics and Mathematics. Exploring how both subjects intertwine and underpin one another creates a challenging yet rewarding programme.

Key transferable skills

+ Construction of logical arguments
+ Advanced theoretical literacy
+ Formal problem-solving in complex domains
+ Cross disciplinary synthesis of pure and applied mathematics.

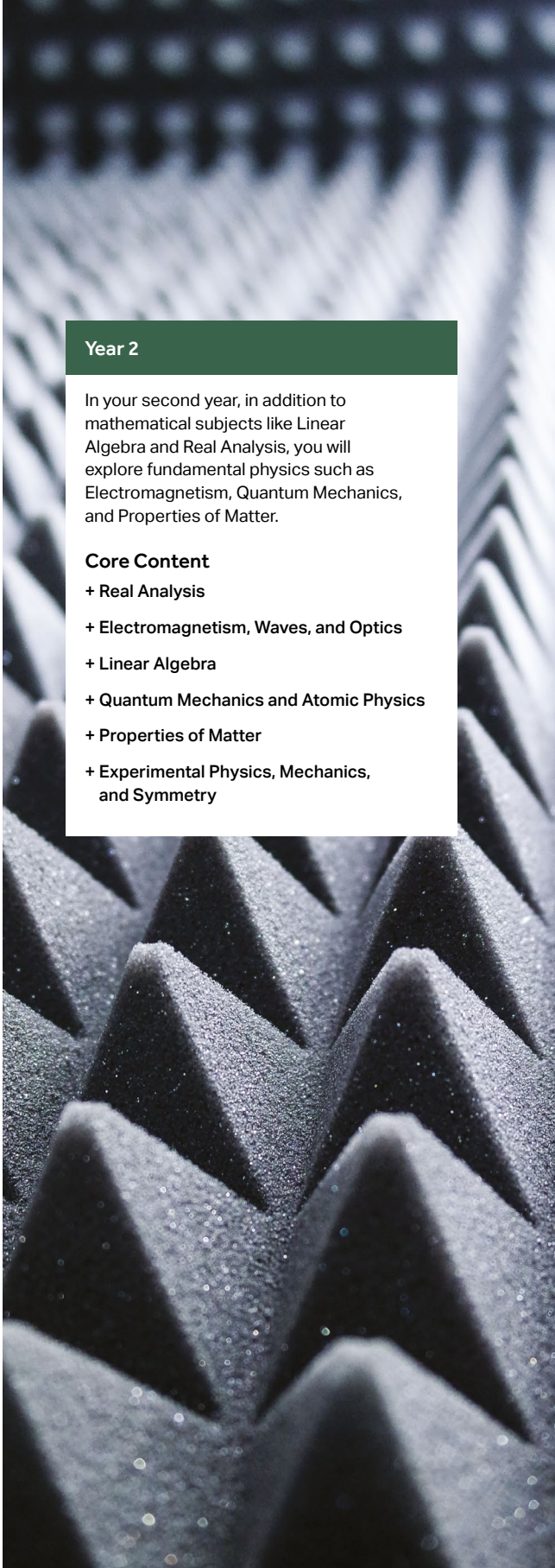
Example career pathways

+ Cryptography and cyber security
+ Quantitative finance
+ Mathematical modeling
+ Mathematics and Physics teaching

Enhancing your curriculum

We continually review and enhance our course curricula to ensure we are delivering the best possible learning experience, and to make sure that the subject knowledge and transferable skills you develop will prepare you for your future.

Information within this publication with respect to courses and modules is correct at the time of publication, and the University will make every reasonable effort to offer courses and modules as advertised. In some cases, changes may be necessary and may result in new modules or some modules and combinations being unavailable, for example as a result of student feedback, timetabling, staff changes and new research.



Year 2

In your second year, in addition to mathematical subjects like Linear Algebra and Real Analysis, you will explore fundamental physics such as Electromagnetism, Quantum Mechanics, and Properties of Matter.

Core Content

+ Real Analysis
+ Electromagnetism, Waves, and Optics
+ Linear Algebra
+ Quantum Mechanics and Atomic Physics
+ Properties of Matter
+ Experimental Physics, Mechanics, and Symmetry

Year 4

Your fourth year will focus heavily on your physics project, however, there are a variety of optional modules to take alongside it to supplement your research, and particularly your understanding of advanced mathematical concepts.

Core Content

+ Advanced Theoretical Physics
+ Year 4 Physics Project - see page 8 for details.

Optional Content

Examples currently include

+ Operators and Spectral Theory
+ Galois Theory
+ Probability Theory
+ Topics in Modern Number Theory
+ General Relativity
+ Measure and Integration
+ Lie Groups and Lie Algebras
+ Combinatorics
+ Advanced CPM
+ Gauge Theories, Groups and Symmetries

Year 3

In your third year, you will begin to encounter more optionality. You will continue to explore the fundamental elements of physics and mathematics through our core content, but you will begin to tailor your degree scheme to suit your interests.

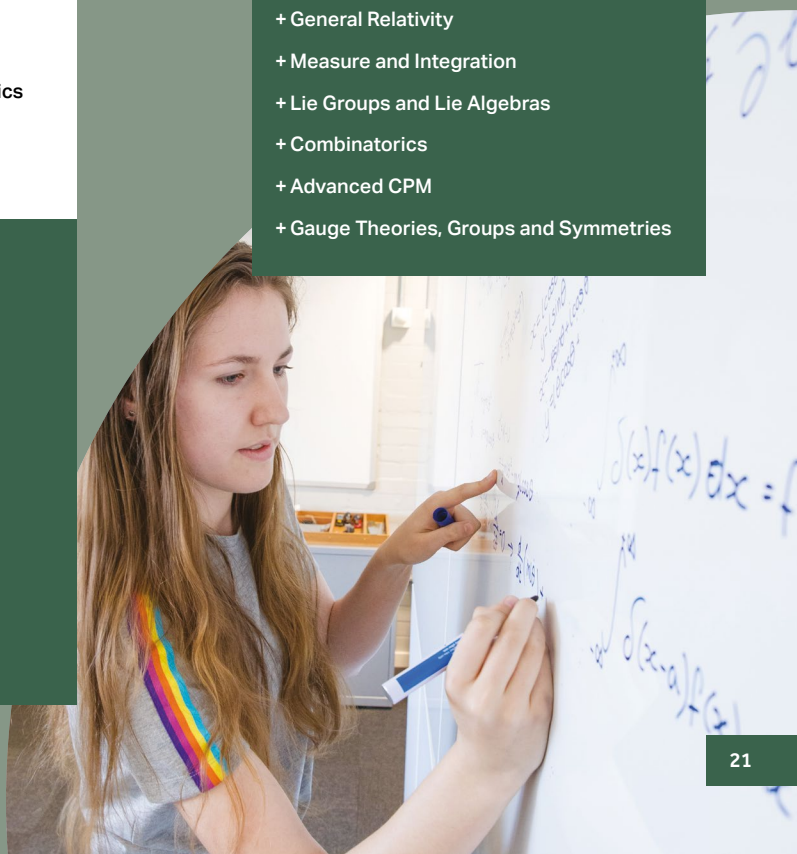
Core Content

+ Relativity, Nuclear, and Particle Physics
+ Field Theory in Quantum Mechanics
+ Theoretical Physics Group Project

Optional Content

Examples currently include

+ Metric Spaces and Topology
+ Communicative Algebra
+ Mathematical Cryptology
+ Hilbert Spaces
+ Knots and Geometry
+ Graph Theory and Algorithms
+ Condensed Matter Physics
+ Further Particle Physics
+ Cosmology



“My education at Lancaster gave me the skills that have enabled my smooth transition into the quantum computing industry”

George

MPhys Physics Graduate

During my time at Lancaster, I developed an interest in Cryogenic Electronics and was able to research that area during my final year MPhys project. I then went on to complete a PhD in the department where I worked on strategies to characterise and manage heating in realistic quantum computation platforms at milli-Kelvin temperatures. My education at Lancaster gave me the skills in applied cryogenics, electronics and physics that have enabled my smooth transition into the quantum computing industry, where I now work in London.

Quantum Motion Technologies (UK)

Senior IC Validation Engineer

MPhys Physics

92%

of our students go on to work or study within 15 months of graduating

The Guardian University Guide 2025

Your future career

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.

Developing your employability

Our degree schemes will develop transferable skills such as critical thinking, problem solving, numeracy, communication, team work and computational skills, all of which are highly sought by employers. In addition to this, our dedicated Employability Champion provides individual support, organises trips to careers fairs, and runs the Employability Booster Programme.

Internship opportunities

Our Faculty of Science and Technology internship programme gives you the opportunity to obtain high quality, relevant work experience that will help you stand out when applying for graduate jobs. They will help you to really accelerate your development of vital sector-specific and transferable skills. Full-time, summer internship opportunities are available from July to September. Part-time internships are available all year round at varying durations to fit around your academic requirements.

Graduate destinations

Our recent graduates have moved into a diverse range of roles, across a variety of different sectors, including:

- Graduate Systems Engineer Energy Consultant
- Fraud Analyst
- Software Programmer
- Aircraft and Space Manufacturer
- Graduate Meteorologist
- Accountant
- Radioactivity Analyst
- PhD Researcher
- Data Technician
- Project Coordinator
- Finance Graduate

Our graduates find that their analytical and organisational skills, plus their ability to achieve insights into problems, are greatly valued by employers in many other areas including in teaching and education, business and management, and marketing and communications.

Find out more

FSC
www.fsc.org
MIX
Paper | Supporting responsible forestry
FSC® C015185

Planting trees to catch carbon · Planting trees to catch carbon ·
3043871
Carbon Captured Material

recycle

Lancaster Physics Department
phsyics-admissions@lancaster.ac.uk
lancaster.ac.uk/physics