UNIVERSITY OF LIVERPOOL

MPhys (Hons)

# Physics

**UCAS code** F303

| **Study mode** | **Duration** | |
|---|---|---|
| Full-time | 4 years | Apply by: **30 June 2026**<br>Starts on: **28 September 2026** |

## About this course

This programme is for those considering a career as a professional physicist in fundamental research or industrial research and development. It covers a wider range of topics than the Physics BSc and provides more research experience.

## Introduction

This programme is intended for those considering a career as a professional physicist in fundamental research or industrial research and development. It covers a wider range of topics than the Physics BSc and provides more research experience.

The Department has an excellent track record of securing PhD studentships and, as a consequence, our graduates have a good opportunity to study higher degrees spanning the whole of physics. The research-led teaching will provide a core of experience that will make you an excellent researcher and also prepare you to excel in many other professions.

Anyone who is curious about the fundamental laws of nature will enjoy Physics. It is one of the few disciplines that really challenge our view of the world. For example, in relativity we find that space and time are entangled and that clocks run slowly under the influence of a gravitational field. When we examine the world on a microscopic scale, we are in the realm

of quantum mechanics, where the predictions, such as wave-particle duality, even seem strange to the physicists who study its foundations.

### Programme in detail

In addition to core physics modules, you will also take mathematics, computing and experimental physics modules. There is an advanced computer modelling project in the third year. There may be opportunities to carry out a major project at an international laboratory such as TRIUMF in Vancouver, CERN in Geneva or the Diamond Light Source in Oxfordshire during the summer vacation between the third and fourth years for three months. These projects are fully paid and can form the basis of a more substantial final-year project at the cutting-edge of research.

There are opportunities to work alongside our internationally renowned academics at projects at the LHC at CERN and in many international and national research centres in the USA, Canada, Japan, Korea and many European countries.

Our flexible programmes allow students to transfer up to the end of year two between any of the physics programmes.

This programme also has a year abroad option, an incredible opportunity to spend an academic year at one of our partner universities. On the 4-year integrated masters programme, you can go abroad either between Year 2 and 3 (apply in Year 2) OR Year 3 and 4 (apply in Year 3).

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## What you'll learn

- How to explore and apply the fundamental priniciples of physics
- Numeracy skills
- Problem solving skills
- Ability to reason clearly and comunicate effectively

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## Accreditation

This programme is accredited by the Institute of Physics, which means it satisfies the academic requirements for Chartered Physicist status.

**Accreditation in detail**

## Institute of Physics

This programme is accredited by the Institute of Physics, which means it satisfies the academic requirements for Chartered Physicist status. The Institute of Physics is the professional body for physics in the UK and Ireland.

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# Course content

Discover what you'll learn, what you'll study, and how you'll be taught and assessed.

### Year one

Your first year starts with a one-week project, designed to familiarise you with the staff and other students. There will be three mathematics modules in the first two years, which will provide the mathematical skills required by physics students.

## Modules

| Compulsory modules | Credits |
|---|---|
| DYNAMICS AND RELATIVITY (PHYS101) | 15 |
| THERMAL PHYSICS AND PROPERTIES OF MATTER (PHYS102) | 15 |
| ELECTRICITY, MAGNETISM AND WAVES (PHYS103) | 15 |
| FOUNDATIONS OF QUANTUM PHYSICS (PHYS104) | 15 |
| INTRODUCTION TO COMPUTATIONAL PHYSICS (PHYS105) | 7.5 |
| PRACTICAL PHYSICS I (PHYS106) | 15 |
| MATHEMATICS FOR PHYSICISTS I (PHYS107) | 15 |
| MATHEMATICS FOR PHYSICISTS II (PHYS108) | 15 |

| Optional modules | Credits |
|---|---|
| INTRODUCTION TO MEDICAL PHYSICS (PHYS115) | 7.5 |
| INTRODUCTION TO NUCLEAR SCIENCE (PHYS135) | 7.5 |
| INTRODUCTION TO ASTROPHYSICS (PHYS155) | 7.5 |
| INTRODUCTION TO GEOPHYSICS (PHYS175) | 7.5 |

Programme details and modules listed are illustrative only and subject to change. As part of our commitment to continuous improvement, we are currently reviewing all of our programmes. This may include refining study pathways, strengthening links with employers, integrating generative AI, developing students' research skills, and enhancing alignment with our research strengths. The course content currently shown on this page reflects the programme as it is running in September 2026. This page will be updated for students beginning in September 2027 by 1 September 2026 at the latest.

### Year two

In year two you will broaden your understanding of physics, with modules designed to ensure you have mastered the full range of physics concepts.

## Modules

| Compulsory modules | Credits |
|---|---|
| NUCLEAR AND PARTICLE PHYSICS (PHYS201) | 15 |
| CONDENSED MATTER PHYSICS (PHYS202) | 15 |
| ELECTROMAGNETISM I (PHYS203) | 15 |

| Compulsory modules | Credits |
|---|---|
| QUANTUM AND ATOMIC PHYSICS I (PHYS204) | 15 |
| COMPUTATIONAL PHYSICS (PHYS205) | 15 |
| PRACTICAL PHYSICS II (PHYS206) | 15 |
| MATHEMATICS FOR PHYSICISTS III (PHYS207) | 15 |

| Optional modules | Credits |
|---|---|
| MATHEMATICS FOR PHYSICISTS IV (PHYS208) | 15 |
| ACCELERATORS AND RADIOISOTOPES (PHYS246) | 15 |
| STELLAR PHYSICS (PHYS251) | 15 |

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## Year three

With the core physics modules completed in the first two years there is now considerable scope to choose amongst the optional modules available, mostly based around the research interests of the departmental staff.

## Modules

| Compulsory modules | Credits |
|---|---|
| COMPUTATIONAL MODELLING (PHYS305) | 15 |
| QUANTUM AND ATOMIC PHYSICS II (PHYS361) | 15 |
| ELECTROMAGNETISM II (PHYS370) | 15 |
| STATISTICAL THERMODYNAMICS (PHYS393) | 7.5 |
| PRACTICAL PHYSICS III (PHYS306) | 15 |

| Optional modules | Credits |
|---|---|
| PHYSICS INTERNSHIP (PHYS309) | 15 |
| NUCLEAR POWER (PHYS376) | 15 |
| PARTICLE PHYSICS (PHYS377) | 15 |
| SOLID STATE PHYSICS (PHYS302) | 15 |
| PHYSICS OF GALAXIES (PHYS373) | 15 |
| PHYSICS OF RENEWABLE ENERGY AND ELECTRONIC DEVICES (PHYS312) | 15 |
| RELATIVITY AND COSMOLOGY (PHYS374) | 15 |
| NUCLEAR PHYSICS (PHYS375) | 15 |
| PHYSICS DATA ANALYSIS WITH STATISTICS (PHYS392) | 15 |

| Optional modules | Credits |
|---|---|
| ENERGY GENERATION AND STORAGE (PHYS372) | 7.5 |
| MEDICAL APPLICATIONS (PHYS384) | 15 |
| APPLICATIONS OF PHYSICS PRINCIPLES (PHYS300) | 7.5 |
| STELLAR ATMOSPHERES (PHYS352) | 7.5 |
| PHYSICS OF PLANETS (PHYS355) | 15 |
| PHYSICS OF SOUND AND MUSIC (PHYS321) | 7.5 |
| PHYSICS OF LIFE (PHYS382) | 7.5 |

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### Year four

In the final year of the course you will have considerable flexibility to choose between the many optional modules based around various physics research areas. You will also undertake an extended project with a member of staff, normally in their research area.

## Modules

| Compulsory modules | Credits |
|---|---|
| PROJECT (MPHYS) (PHYS498) | 45 |

| Optional modules | Credits |
|---|---|
| CLASSICAL MECHANICS (PHYS470) | 15 |
| ADVANCED QUANTUM PHYSICS (PHYS480) | 15 |
| ACCELERATOR PHYSICS (PHYS481) | 15 |
| PHYSICS OF LIFE (PHYS482) | 7.5 |
| ADVANCED NUCLEAR PHYSICS (PHYS490) | 15 |
| FRONTIERS OF PARTICLE PHYSICS (PHYS492) | 15 |
| THEORETICAL FOUNDATIONS OF PARTICLE PHYSICS (PHYS493) | 15 |
| STELLAR POPULATIONS (PHYS483) | 15 |
| ELEMENTS OF STELLAR DYNAMICS (PHYS484) | 7.5 |
| PHYSICS OF THE RADIATIVE UNIVERSE (PHYS485) | 15 |
| FRONTIERS OF TIME DOMAIN ASTROPHYSICS (PHYS453) | 15 |
| NUMERICAL METHODS IN PHYSICS (PHYS405) | 15 |
| MATERIALS PHYSICS FOR MODERN TECHNOLOGIES (PHYS402) | 15 |

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**Teaching and assessment**

## How you'll learn

Our research-led teaching ensures you are taught the latest advances in cutting-edge physics research. Lectures introduce and provide the details of the various areas of physics and related subjects. You will be working in tutorials and problem-solving workshops, which are another crucial element in the learning process, where you put your knowledge into practice. They help you to develop a working knowledge and understanding of physics. All of the lecturers also perform world class research and use this to enhance their teaching.

Most work takes place in small groups with a tutor or in a larger class where staff provide help as needed. Practical work is an integral part of the programmes, and ranges from training in basic laboratory skills in the first two years to a research project in the third or fourth year. You will undertake an extended project on a research topic with a member of staff who will mentor you. By the end of the degree you will be well prepared to tackle problems in any area and present yourself and your work both in writing and in person. In the first two years students take maths modules which provide the support all students need to understand the physics topics.

## How you're assessed

The main modes of assessment are coursework and examination. Depending on the modules taken you may encounter project work, presentations (individual or group), and specific tests or tasks focused on solidifying learning outcomes.

## Liverpool Learning Framework

At Liverpool, we take a distinctive approach to education through the Liverpool Learning Framework. This means teaching that is engaging, inclusive and designed to help you succeed during your studies and beyond.

You'll develop specialist subject knowledge alongside the skills employers value most, including:

- Digital fluency
- Confidence
- Global citizenship

Our curriculum is characterised by the three Liverpool Hallmarks:

- Research-connected teaching - learning informed by the latest ideas and discoveries
- Active learning - taking part, applying knowledge and learning by doing
- Authentic assessment - assessments designed around real-world tasks and challenges

We also embed key priorities across our curriculum, including AI literacy, employability, and sustainability, helping you prepare for the future and make a positive impact in the world.

We're committed to creating a supportive and inclusive learning environment where every student can thrive.

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## Careers and employability

A physics degree is a great starting point for a physics related career, engineering and computing careers.

The knowledge, skills and experience that our you'll develop during your degree are in demand by employers. Graduates have gone on to explore careers in areas as diverse as:

- Telecommunications
- Microelectronics
- Nuclear power
- Instrumentation
- Cryogenics
- Astronomy
- Geophysics
- Medical physics
- Materials science
- Computing
- Teaching
- Business
- Finance
- Management.

### Progressing to research

The Department of Physics attracts considerable research income, creating excellent opportunities to progress to a research degree, particularly in the fields of condensed matter physics, nuclear physics, particle physics, nanoscience and energy.

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# Fees and funding

Your tuition fees, funding your studies, and other costs to consider.

### Tuition fees

#### UK fees (applies to Channel Islands, Isle of Man and Republic of Ireland)

Full-time place, per year - £9,790
Year in industry fee - £1,955
Year abroad fee - £1,465 (applies to year in China)

#### International fees

Full-time place, per year - £32,000
Year in industry fee - £1,955
Year abroad fee - £16,000 (applies to year in China)

The fees shown are for the academic year 2026/27. Please be advised that tuition fees may increase each year for both UK and international students. For UK students, this will be subject to the government's regulated fee limits.

Tuition fees cover the cost of your teaching and assessment, operating facilities such as libraries, IT equipment, and access to academic and personal support. Learn more about paying for your studies.

## Additional costs

We understand that budgeting for your time at university is important, and we want to make sure you understand any course-related costs that are not covered by your tuition fee. You can find information on the general and subject-specific costs you could expect to incur on our study costs webpage.

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# Entry requirements

The qualifications and exam results you'll need to apply for this course.

### A levels

ABB
including Physics and Mathematics at A level.

Applicants with the Extended Project Qualification (EPQ) are eligible for a reduction in grade requirements. For this course, the offer is **BBB** from A levels, with **A** in the EPQ.

You may automatically qualify for reduced entry requirements through our contextual offers scheme. Based on your personal circumstances, you may automatically qualify for up to a two-grade reduction in the entry requirements needed for this course. When you apply, we consider a range of factors – such as where you live – to assess if you're eligible for a grade reduction. You don't have to make an application for a grade reduction – we'll do all the work.

Find out more about how we make reduced grade offers.

### T levels

T levels are not currently accepted.

### GCSE

4/C in English and 4/C in Mathematics

### Subject requirements

For applicants from England: For science A levels that include the separately graded practical endorsement, a "Pass" is required.

### BTEC Level 3 National Extended Diploma

Applications considered alongside A levels. Please contact the University for further information.

### International Baccalaureate

32 points overall and no score less than 4 and including a minimum of 5 in HL Mathematics and 5 in HL Physics, or pass the IB Diploma with 6,5,5 in three Higher Level subjects (including HL Mathematics and HL Physics).

**Irish Leaving Certificate**

H1, H2, H2, H2, H3, H3 including Physics and Mathematics at H2 or above.

**Scottish Higher/Advanced Higher**

Advanced Highers accepted at grades ABB including Physics and Mathematics.

**Welsh Baccalaureate Advanced**

B in the Welsh Baccalaureate, plus AB in A level Mathematics and A level Physics.

**Access**

Pass Access to HE Diploma in a relevant subject with 45 Level 3 credits with 33 at Distinction (including 15 credits in Mathematics and 15 credits in Physics) and 12 at Merit.

**International qualifications**

Select your country or region to view specific entry requirements.

If you hold a bachelor's degree or equivalent, but don't meet our entry requirements, you could be eligible for a Pre-Master's course. This is offered on campus at the University of Liverpool International College, in partnership with Kaplan International Pathways. It's a specialist preparation course for postgraduate study, and when you pass the Pre-Master's at the required level with good attendance, you're guaranteed entry to a University of Liverpool master's degree.

## Alternative entry requirements

- If your qualification isn't listed here, or you're taking a combination of qualifications, contact us for advice

- Applications from mature students are welcome.

## English language requirements

You'll need to demonstrate competence in the use of English language, unless you're from a majority English speaking country.

We accept a variety of international language tests and country-specific qualifications.

International applicants who do not meet the minimum required standard of English language can complete one of our Pre-Sessional English courses to achieve the required level.

**IELTS**

6.0 overall, with no component below 5.5

**TOEFL iBT**

If you took a TOEFL test on or before 20 January 2026, you'll need 78 overall, with minimum scores of listening 17, writing 17, reading 17 and speaking 19. If you took a TOEFL test from 21 January 2026 onwards, when a new scoring system was introduced, you'll need 4 overall, with 4 or above in all components. TOEFL Home Edition not accepted.

**Duolingo English Test**

115 overall, with speaking, reading and writing not less than 105, and listening not below 100

**Pearson PTE Academic**

59 overall, with no component below 59

**LanguageCert Academic**

65 overall, with no skill below 60

**Cambridge IGCSE First Language English 0500**

Grade C overall, with a minimum of grade 2 in speaking and listening. Speaking and listening must be separately endorsed on the certificate.

**Cambridge IGCSE First Language English 0990**

Grade 4 overall, with Merit in speaking and listening

**Cambridge IGCSE Second Language English 0510/0511**

0510: Grade C overall, with a minimum of grade 2 in speaking. Speaking must be separately endorsed on the certificate. 0511: Grade C overall.

**Cambridge IGCSE Second Language English 0993/0991**

0993: Grade 5 overall, with a minimum of grade 2 in speaking. Speaking must be separately endorsed on the certificate. 0991: Grade 5 overall.

**Cambridge ESOL Level 2/3 Advanced**

169 overall, with no paper below 162

**International Baccalaureate English A: Literature or Language & Literature**

Grade 4 at Standard Level or grade 4 at Higher Level

**International Baccalaureate English B**

Grade 6 at Standard Level or grade 5 at Higher Level

## Pre-sessional English

Do you need to complete a Pre-sessional English course to meet the English language requirements for this course?

The length of Pre-sessional English course you'll need to take depends on your current level of English language ability.

## Pre-sessional English in detail

If you don’t meet our English language requirements, we can use your most recent IELTS score, or the equivalent score in selected other English language tests, to determine the length of Pre-sessional English course you require.

Use the table below to check the course length you're likely to require for your current English language ability and see whether the course is available on campus or online.

| Your most recent IELTS score | Pre-sessional English course length | On campus or online |
|---|---|---|
| 5.5 overall, with no component below 5.5 | 6 weeks | On campus or online |
| 5.5 overall, with no component below 5.0 | 10 weeks | On campus or online |
| 5.0 overall, with no component below 5.0 | 12 weeks | Online |
| 5.0 overall, with no component below 4.5 | 20 weeks | On campus |
| 4.5 overall, with no component below 4.5 | 30 weeks | On campus |
| 4.0 overall, with no component below 4.0 | 40 weeks | On campus |

If you’ve completed an alternative English language test to IELTS, we may be able to use this to assess your English language ability and determine the Pre-sessional English course length you require.

Please see our guide to Pre-sessional English entry requirements for IELTS 6.0 overall, with no component below 5.5, for further details.

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Generated: 3 Aug 2026, 14:08

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