



BSc (Hons)

# Physics with Nuclear Science

UCAS code F390

## Entry requirements

A level: ABB

## Study mode

Full-time

## Duration

3 years

Apply by: **29 January 2025**

Starts on: **22 September 2025**

## About this course

Study Physics with Nuclear Science at Liverpool and ensure you're fully equipped with the skills and knowledge necessary for a successful career in nuclear-related industries. In addition to core physics, you'll also study mathematics, computing and experimental physics.

## Introduction

You will explore and apply fundamental principles that underpin modern physics, from electrodynamics and semiconductors to the startling conclusions of relativity and quantum mechanics, alongside the study of selected topics in the field of nuclear science.

Our network of academic advisors and open-door policy ensures a friendly and supportive learning environment.

Take your university experience even further on a paid year-long industry placement, or spend a year abroad at a partner university or our China campus.

Throughout your course, you will discover links with many parts of the growing nuclear industry, including those involved with decommissioning and homeland security. Staff from these institutions will be involved in project work undertaken.

## What you'll learn

- Detailed knowledge in the core fundamental principles of modern physics
  - Skills necessary for a career in the growing sector of nuclear science
  - Latest advances in cutting-edge physics research
  - Problem solving
  - How to undertake research and practical work
  - How to present and communicate clearly
  - Strong powers of analysis, numeracy, and good IT skills
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## Accreditation

This course is accredited by the Institute of Physics.

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### 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.

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## Year one

Your first year starts with a one-week project to familiarise you with the staff and other students.

There will be two Maths modules in the first year, and one in the second year, designed to provide the mathematical skills required by Physics students.

## Modules

Compulsory modules	Credits
<u>DYNAMICS AND RELATIVITY (PHYS101)</u>	15
<u>THERMAL PHYSICS AND PROPERTIES OF MATTER (PHYS102)</u>	15
<u>ELECTRICITY, MAGNETISM AND WAVES (PHYS103)</u>	15
<u>FOUNDATIONS OF QUANTUM PHYSICS (PHYS104)</u>	15
<u>INTRODUCTION TO COMPUTATIONAL PHYSICS (PHYS105)</u>	7.5
<u>PRACTICAL PHYSICS I (PHYS106)</u>	15
<u>MATHEMATICS FOR PHYSICISTS I (PHYS107)</u>	15
<u>MATHEMATICS FOR PHYSICISTS II (PHYS108)</u>	15
<u>INTRODUCTION TO NUCLEAR SCIENCE (PHYS135)</u>	7.5

Programme details and modules listed are illustrative only and subject to change.

## Year two

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

# Modules

Compulsory modules	Credits
<u><a href="#">ELECTROMAGNETISM I (PHYS201)</a></u>	15
<u><a href="#">CONDENSED MATTER PHYSICS I (PHYS202)</a></u>	15
<u><a href="#">QUANTUM AND ATOMIC PHYSICS I (PHYS203)</a></u>	15
<u><a href="#">NUCLEAR AND PARTICLE PHYSICS (PHYS204)</a></u>	15
<u><a href="#">COMPUTATIONAL PHYSICS (PHYS205)</a></u>	15
<u><a href="#">PRACTICAL PHYSICS II (PHYS206)</a></u>	15
<u><a href="#">MATHEMATICS FOR PHYSICISTS III (PHYS207)</a></u>	15
<u><a href="#">ACCELERATORS AND RADIOISOTOPES IN MEDICINE (PHYS246)</a></u>	15

Programme details and modules listed are illustrative only and subject to change.

## Year three

Your third year comprises a mix of core modules and many optional modules in Physics. You will undertake a research project with a member of staff and one of our partner companies on an aspect of Nuclear Physics.

# Modules

Compulsory modules	Credits
<u><a href="#">RADIATION PHYSICS ADVANCED PRACTICAL (PHYS380)</a></u>	7.5
<u><a href="#">NUCLEAR SCIENCE PROJECT (PHYS398)</a></u>	30

<b>Compulsory modules</b>	<b>Credits</b>
<u>QUANTUM AND ATOMIC PHYSICS II (PHYS361)</u>	15
<u>ELECTROMAGNETISM II (PHYS370)</u>	15
<u>STATISTICAL THERMODYNAMICS (PHYS393)</u>	7.5
<u>NUCLEAR PHYSICS (PHYS375)</u>	15
<u>NUCLEAR POWER (PHYS376)</u>	15
<b>Optional modules</b>	<b>Credits</b>
<u>PHYSICS INTERNSHIP (PHYS309)</u>	15
<u>COMPUTATIONAL MODELLING (PHYS305)</u>	15
<u>PARTICLE PHYSICS (PHYS377)</u>	15
<u>SOLID STATE PHYSICS (PHYS363)</u>	7.5
<u>MATERIALS PHYSICS AND CHARACTERISATION (PHYS387)</u>	7.5
<u>MAGNETIC PROPERTIES OF SOLIDS (PHYS399)</u>	7.5
<u>SEMICONDUCTOR APPLICATIONS (PHYS389)</u>	7.5
<u>PHYSICS DATA ANALYSIS WITH STATISTICS (PHYS392)</u>	15
<u>ENERGY GENERATION AND STORAGE (PHYS372)</u>	7.5
<u>MEDICAL APPLICATIONS (PHYS384)</u>	15

Optional modules	Credits
<u>PHYSICS OF PLANETS (PHYS355)</u>	7.5
<u>PHYSICS OF GALAXIES (PHYS373)</u>	15
<u>RELATIVITY AND COSMOLOGY (PHYS374)</u>	15
<u>PHYSICS OF SOUND AND MUSIC (PHYS321)</u>	7.5
<u>SURFACES AND INTERFACES (PHYS381)</u>	7.5

Programme details and modules listed are illustrative only and subject to change.

## 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 Hallmarks

We have a distinctive approach to education, the Liverpool Curriculum Framework, which focuses on research-connected teaching, active learning, and authentic assessment to ensure our students graduate as digitally fluent and confident global citizens.

The Liverpool Curriculum framework sets out our distinctive approach to education. Our teaching staff support our students to develop academic knowledge, skills, and understanding alongside our **graduate attributes**:

- Digital fluency
- Confidence
- Global citizenship

Our curriculum is characterised by the three **Liverpool Hallmarks**:

- Research-connected teaching
- Active learning
- Authentic assessment

All this is underpinned by our core value of **inclusivity** and commitment to providing a curriculum that is accessible to all students.

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# Careers and employability

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

Physicists are trained to solve a wide range of problems. That's why graduates have gone on to explore careers in such diverse areas such as:

- telecommunications
- microelectronics
- nuclear power and instrumentation
- cryogenics
- astronomy
- geophysics
- medical physics
- materials science
- computing
- teaching
- business, finance and management.

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# Fees and funding

Your tuition fees, how to pay, 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 - £9,535

Year abroad fee - £1,430 (applies to year in China)

### International fees

Full-time place, per year - £29,100

Year abroad fee - £14,550 (applies to year in China)

The tuition fees shown are correct for 2025/26 entry. Please note that the year abroad fee also applies to the year in China.

Tuition fees cover the cost of your teaching, assessment, operating University facilities such as libraries, IT equipment, and access to academic and personal support.

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## 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. This could include buying a laptop, books, or stationery.

Find out more about the [additional study costs](#) that may apply to this course.

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# Entry requirements

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

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## 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** 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](#).

If you don't meet the entry requirements, you may be able to complete a foundation year which would allow you to progress to this course.

Available foundation years:

- [Physical Sciences \(4 year route including a Foundation Year at Carmel College\) BSc \(Hons\)](#)

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## T levels

T levels are not currently accepted.

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## GCSE

4/C in English and 4/C in Mathematics

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## Subject requirements

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

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## BTEC Level 3 National Extended Diploma

Applications considered alongside A levels. Please contact the University for

further information.

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### **International Baccalaureate**

33 points that must include 6 points each from Physics and Mathematics at Higher level.

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### **Irish Leaving Certificate**

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

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### **Scottish Higher/Advanced Higher**

Advanced Highers accepted at grades ABB including Physics and Mathematics.

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### **Welsh Baccalaureate Advanced**

Accepted at grade B, including Mathematics and Physics A Levels at AB.

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### **Access**

45 Level 3 credits in graded units in a relevant Diploma, including 30 at Distinction and a further 15 with at least Merit. GCSE grades 4/C in English and 4/C in Mathematics also required. 15 Distinctions are required in each of Mathematics and Physics.

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### **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.

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# 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.

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## **IELTS**

6.0 overall, with no component below 5.5

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## **TOEFL iBT**

78 overall, with minimum scores of listening 17, writing 17, reading 17 and speaking 19. TOEFL Home Edition not accepted.

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## **TOEFL Paper**

Grade 6 at Standard Level or grade 5 at Higher Level

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## **Duolingo English Test**

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

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## **Pearson PTE Academic**

59 overall, with no component below 59

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## **LanguageCert Academic**

65 overall, with no skill below 60

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## **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.

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### **Cambridge IGCSE First Language English 0990**

Grade 4 overall, with Merit in speaking and listening

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### **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.

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### **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.

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### **Cambridge ESOL Level 2/3 Advanced**

169 overall, with no paper below 162

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### **LanguageCert**

Grade 4 at Standard Level or grade 4 at Higher Level

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## **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.

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### **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.

<b>Your most recent IELTS score</b>	<b>Pre-sessional English course length</b>	<b>On campus or online</b>
5.5 overall, with no component below 5.5	6 weeks	On campus
5.5 overall, with no component below 5.0	10 weeks	On campus and online options available
5.0 overall, with no component below 5.0	12 weeks	On campus and online options available
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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## **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.

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