UNIVERSITY OF LIVERPOOL

MPhys (Hons)

Astrophysics

UCAS code F521

Entry requirements	Study mode	Duration	
A level: ABB	Full-time	4 years	Apply by: **14 January 2026** Starts on: **28 September 2026**

About this course

A degree in Astrophysics has the unique potential to provide an understanding of the most up-to-date discoveries in our universe. You'll be introduced to all aspects of physics and astronomy, from quantum mechanics to cosmology. Astrophysics (MPhys) is taught jointly by world-leading academics from the University of Liverpool and Liverpool John Moores University (LJMU).

Introduction

From the formation, evolution and deaths of stars (involving planetary systems, nucleosynthesis and supernovae) through structure of galaxies to the evolution of the Universe itself, the degree structure introduces the physics involved in the cosmos. At the end of Year Two, the week-long field trip to the Teide Observatory in Tenerife introduces students to professional observatories.

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.

The four-year Astrophysics degree will equip students with skills relevant for jobs in a wide range of careers, from education, research, finance and the city to industry.

The two-metre aperture Liverpool Telescope located in the Canaries, which is the largest robotically controlled telescope in the world, will provide you with unique access to observations from a major research facility when you undertake a research project in your final year.

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).

This course is taught jointly by academics from the University of Liverpool and LJMU. The University of Liverpool will send you a jointly branded certificate if you successfully complete your named award, or if you're awarded a joint exit award. Your certificates will clearly state that the course leads to a joint award.

Browse the LJMU course catalogue to explore more courses run jointly with LJMU.

What you'll learn

- A working knowledge and understanding of physics and astronomy
- A solid base in mathematics
- Skills relevant to real-world industry settings
- How to undertake research
- Problem-solving
- How to present and communicate clearly

Accreditation

Our programmes are accredited by the Institute of Physics, which means they satisfy the academic requirements for Chartered Physicist status.

This course is taught jointly by world-leading academics from the University of Liverpool and Liverpool John Moores University.

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.

LJMU

This course is taught jointly by world-leading academics from the University of Liverpool and Liverpool John Moores University.

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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 two mathematics modules in each of 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
INTRODUCTION TO ASTROPHYSICS (PHYS155)	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 you have mastered the full range of its concepts.

There is a week-long field trip to the Teide Observatory in Tenerife, where students make astronomical measurements at a professional observatory. The two-metre aperture Liverpool Telescope, the largest robotically controlled telescope in the world, will provide you with unique access to observations from a major research facility when you undertake a research project in your final year.

Modules

Compulsory modules	Credits
CONDENSED MATTER PHYSICS I (PHYS202)	15
ELECTROMAGNETISM I (PHYS201)	15
MATHEMATICS FOR PHYSICISTS III (PHYS207)	15
NUCLEAR AND PARTICLE PHYSICS (PHYS204)	15
QUANTUM AND ATOMIC PHYSICS I (PHYS203)	15
STELLAR PHYSICS (PHYS251)	15
OBSERVATIONAL ASTROPHYSICS (PHYS216)	15
COMPUTATIONAL PHYSICS (PHYS205)	15

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

Year three

In this year there is considerable scope to broaden out from core physics and choose amongst the optional modules available, mostly based around the research interests of the departmental staff.

Modules

Compulsory modules	Credits
STATISTICAL THERMODYNAMICS (PHYS393)	7.5
RELATIVITY AND COSMOLOGY (PHYS374)	15
ELECTROMAGNETISM II (PHYS370)	15
QUANTUM AND ATOMIC PHYSICS II (PHYS361)	15
PHYSICS OF GALAXIES (PHYS373)	15
ADVANCED OBSERVATIONAL ASTROPHYSICS (PHYS362)	15
COMPUTATIONAL MODELLING (PHYS305)	15

Optional modules	Credits
SOLID STATE PHYSICS (PHYS363)	7.5
MATERIALS PHYSICS AND CHARACTERISATION (PHYS387)	7.5
PHYSICS OF PLANETS (PHYS355)	7.5
SEMICONDUCTOR APPLICATIONS (PHYS389)	7.5
STELLAR ATMOSPHERES (PHYS352)	7.5
SURFACES AND INTERFACES (PHYS381)	7.5
PHYSICS DATA ANALYSIS WITH STATISTICS (PHYS392)	15
PHYSICS INTERNSHIP (PHYS309)	15

Optional modules	Credits
PHYSICS OF SOUND AND MUSIC (PHYS321)	7.5
ENERGY GENERATION AND STORAGE (PHYS372)	7.5
NUCLEAR PHYSICS (PHYS375)	15
NUCLEAR POWER (PHYS376)	15
PARTICLE PHYSICS (PHYS377)	15
MAGNETIC PROPERTIES OF SOLIDS (PHYS399)	7.5

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

Year four

In your final year, you will have considerable flexibility to choose between modules based around various astrophysics and physics research areas. You will also undertake an extended project with a member of staff, normally within their research area.

If you're awarded a joint award from the University of Liverpool and LJMU, you'll be eligible to attend the graduation ceremonies at both institutions.

Modules

Compulsory modules	Credits
PROJECT (MPHYS) (PHYS498)	45
THE INTERSTELLAR MEDIUM (PHYS495)	15

Optional modules	Credits
ACCELERATOR PHYSICS (PHYS481)	15
ADVANCED NUCLEAR PHYSICS (PHYS490)	15
THEORETICAL FOUNDATIONS OF PARTICLE PHYSICS (PHYS493)	15
ADVANCED QUANTUM PHYSICS (PHYS480)	15
CLASSICAL MECHANICS (PHYS470)	15
ELEMENTS OF STELLAR DYNAMICS (PHYS484)	7.5
NANOSCALE PHYSICS AND TECHNOLOGY (PHYS499)	7.5
PHYSICS OF THE RADIATIVE UNIVERSE (PHYS485)	15
STELLAR POPULATIONS (PHYS483)	15
FRONTIERS OF TIME DOMAIN ASTROPHYSICS (PHYS453)	15
MPHYS PRACTICAL ASTROPHYSICS II (PHYS400)	7.5
CORRELATED ELECTRON MATERIALS (PHYS486)	7.5
PHYSICAL PRINCIPLES OF MATERIALS (PHYS487)	7.5
PHYSICS OF LIFE (PHYS482)	7.5
FRONTIERS OF PARTICLE PHYSICS (PHYS492)	15

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 workshops, which are another crucial element in the learning process, where you put your knowledge into practice. All of our lecturers also perform world class research and use this to enhance their teaching.

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.

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

The skills gained through studying a degree in Astrophysics are marketable in a vast range of sectors. Typical areas of employment include research, industry, computing, teaching, business and finance.

Many graduates move on to have careers in such diverse areas as:

- Telecommunications
- Microelectronics
- Nuclear power and instrumentation
- Cryogenics
- Astronomy
- Geophysics
- Medical physics
- Materials science.

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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 - £9,790
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, assessment, operating University 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. 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.

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 3 Higher Level subjects, including a minimum of 5 in HL Mathematics and 5 in 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 grades AB at A level in Mathematics and Physics.

Access

Pass Access to HE Diploma in a relevant subject with 45 Level 3 credits, with 33 at Distinction (including 15 in Mathematics and 15 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 88 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 4.5 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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