UNIVERSITY OF LIVERPOOL

BSc (Hons)

Physics with Geophysics

UCAS code F365

Entry requirements	Study mode	Duration
A level: ABB	Full-time	3 years

Apply by: **29 January 2025**
Starts on: **22 September 2025**

About this course

Study this programme and gain a range of transferable skills that will put you at the forefront of modern physics while discovering how planet Earth works and how we use physics to image its static and dynamic subsurface, from inner core to crust.

Introduction

There has never been a better time to study physics and geophysics as we seek to provide sustainable resources for the world's population. On our Physics with Geophysics BSc you will learn fundamental Physics principles that govern the behaviour of matter and energy, which are essential for understanding a wide range of natural phenomena, and then apply these principles within Geophysics to study the Earth's physical properties and processes. This integration helps in comprehensively understanding the Earth's structure and behaviour. As a geophysicist, you'll study the physical aspects of the earth using a range of methods, including gravity, magnetic, electrical and seismic. By collecting data on seismic waves, which move through and around the earth, you'll create a picture of what lies below the earth's surface. This information is vitally important to many industries and governments.

As part of the Department of Physics, you will be taught by academics involved in cutting-edge research across various fields in physics. We are very proud of our

research achievements and major international collaborations, such as the Large Hadron Collider at CERN in Switzerland, STFC's Diamond Light Source and Daresbury Laboratory in the UK, ESRF and GANIL in France, GSI and DESY in Germany, and TRIUMF in Canada. During your studies you will use our award-winning Central Teaching Laboratories with state-of-the-art, superbly equipped and purpose-built teaching spaces that host research-grade equipment. Geophysics students at Liverpool also benefit from extensive fieldwork opportunities. The fieldwork is an integral part of the curriculum, as practical experiences allow students to apply theoretical knowledge in real-world settings, enhancing their understanding of geophysical processes and techniques. Fieldwork in the Physics with Geophysics programme currently involves a residential course. You will also work within one of our research groups to undertake a significant geophysical research project in your final year, which has the possibility to include a fieldwork component. Our students have opportunities to study abroad or take a year in industry. We also have strong connections with industry and governmental agencies who can provide opportunities for collaborative projects, and employment after graduation.

What you'll learn

- Explore and apply the fundamental principles of physics
- Numeracy and problem-solving skills
- Ability to reason clearly and communicate well
- Apply the principles of Physics and Geophysics to study, explore and understand the Earth's structure, atmosphere and space environment.
- Study the Earth's physical properties and processes, including seismic activity, gravitational fields, and magnetic fields

Accreditation

As a new programme, our Physics with Geophysics BSc is pending accreditation by the Institution of Physics (IoP). The programme has been designed to deliver and fulfil the IoP accreditation requirements and it will be fully accredited (subject to approval), as soon as students from the first cohort graduate (approx. in 2028).

Accreditation in detail

Institute of Physics

This programme is accredited by the Institute of Physics, which means it satisies 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.

Back to top

Course content

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

Year one

The first year starts with a one-week project to familiarise you with the staff and other students. There will be three maths modules in across the first and second years; these are designed to provide the mathematical skills required by physics students.

Geophysics – A strong feature of year one is the acquisition of fundamental skills in maths, geology and geoscience, supported by an integrated approach to transferable skills conveyed through the tutorial system.

Modules

Compulsory modules	Credits
PHYSICS ICEBREAKER PROJECT (PHYS100)	
DYNAMICS AND RELATIVITY (PHYS101)	15
INTRODUCTION TO COMPUTATIONAL PHYSICS (PHYS105)	7.5
MATHEMATICS FOR PHYSICISTS I (PHYS107)	15
THERMAL PHYSICS AND PROPERTIES OF MATTER (PHYS102)	15
PRACTICAL PHYSICS I (PHYS106)	15
ELECTRICITY, MAGNETISM AND WAVES (PHYS103)	15
FOUNDATIONS OF QUANTUM PHYSICS (PHYS104)	15
INTRODUCTION TO GEOPHYSICS (PHYS175)	7.5

Compulsory modules	Credits
MATHEMATICS FOR PHYSICISTS II (PHYS108)	15

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 physics concepts. You will also broaden your skillset through modules in applied and computational geophysics.

Fieldwork involves:

- 4 days using industry-standard geophysical survey equipment in the local Liverpool area.

Modules

Compulsory modules	Credits
APPLIED GEOPHYSICS (ENVS216)	15
ELECTROMAGNETISM I (PHYS201)	15
MATHEMATICS FOR PHYSICISTS III (PHYS207)	15
QUANTUM AND ATOMIC PHYSICS I (PHYS203)	15
CONDENSED MATTER PHYSICS I (PHYS202)	15
EARTH AND ENVIRONMENTAL DATA SCIENCE (ENVS229)	15
ENVIRONMENTAL GEOPHYSICS (ENVS258)	15
NUCLEAR AND PARTICLE PHYSICS (PHYS204)	15

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

Year three

The third year comprises a mix of core physics and geophysics modules along with many optional modules in advanced topics. Building on your applied geophysics knowledge, you will undertake an industry-style geophysical survey in the south of Spain. Supported by a supervisor, you will undertake a field, laboratory or computer-based geophysics research project over the duration of your final year.

Fieldwork:

- One week in southern Spain.

Modules

Compulsory modules	Credits
EARTH SCIENCE PROJECT (ENVS300)	30
ELECTROMAGNETISM II (PHYS370)	15
GEOPHYSICAL DATA MODELLING (ENVS386)	15
GEOPHYSICS FIELD SCHOOL (ENVS362)	15
PHYSICS OF PLANETS (PHYS355)	7.5
SIGNAL PROCESSING AND SEISMIC ANALYSIS (ENVS343)	15
STATISTICAL THERMODYNAMICS (PHYS393)	7.5

Optional modules	Credits
MATERIALS PHYSICS AND CHARACTERISATION (PHYS387)	7.5

Optional modules	Credits
NUCLEAR PHYSICS (PHYS375)	15
QUANTUM AND ATOMIC PHYSICS II (PHYS361)	15
SEMICONDUCTOR APPLICATIONS (PHYS389)	7.5
SOLID STATE PHYSICS (PHYS363)	7.5
APPLIED EARTHQUAKE AND VOLCANO SEISMOLOGY (ENVS388)	15
ENERGY GENERATION AND STORAGE (PHYS372)	7.5
GLOBAL GEOPHYSICS AND GEODYNAMICS (ENVS398)	15
MAGNETIC PROPERTIES OF SOLIDS (PHYS399)	7.5
NUCLEAR POWER (PHYS376)	15
PARTICLE PHYSICS (PHYS377)	15
PHYSICS OF SOUND AND MUSIC (PHYS321)	7.5
RELATIVITY AND COSMOLOGY (PHYS374)	15
SURFACES AND INTERFACES (PHYS381)	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

Physics modules – 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.

Geophysics modules – Assessment matches the learning objectives for each module and may take the form of written exams, practical laboratory and computer examinations, coursework submissions in the form of essays, scientific papers, briefing notes or lab/field notebooks, reports and portfolios, oral and poster presentations and contributions to group projects, and problem-solving exercises.

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.

Back to top

Careers and employability

All Physics degrees are highly valued in today's labour market and our graduates have excellent career opportunities in academic & industrial research and development, computing, teaching, business and finance. In addition, the understanding and knowledge that Geophysicists have of the physical processes of the earth, are sought after and employed by environmental agencies, governments, geophysical exploration companies, as well as carbon capture, oil and gas industries.

Studying physics with geophysics opens up a range of diverse and rewarding career opportunities. The combination of these fields equips graduates with strong analytical, quantitative, and problem-solving skills, which are highly valued in various industries.

Most of our recent graduates have gained employment within a degree-related field or continued within further education after graduation.

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

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

Geophysicists also have expanded job opportunities in sectors including:

- Geoscience Energy consultant
- Meteorologist
- Petroleum engineer
- Engineering geologist
- Hazard prediction
- Risk Management
- Oceanographer

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.

Graduate employees have included: Deloitte, IBM, Bosch, PWC, NHS, Jaguar, Sony, Unilever, BMW.

Physics graduates also move into careers outside of science. Popular options include banking and finance, as well as the software, computing and consultancy industries. Other areas include accountancy, law and transport.

Back to top

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 - £9,535
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 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

Additional costs for this course could include travel to placements and fieldwork expenses.

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 may include a laptop, books, or stationery.

Compulsory/optional field class/school placements –
The main costs are covered by the university for the compulsory field trips.

Students are reimbursed for travel costs to school placements, if undertaken as part of an optional module in year three.
http://www.liverpool.ac.uk/paying-for-your-studies/study-costs/?course=physics-bsc-hons

There will be additional costs for a lab coat, geological field kit, and sustenance during compulsory field trips.
http://www.liverpool.ac.uk/paying-for-your-studies/study-costs/?course=environmental-geoscience-bsc-hons

Find out more about additional study costs.

Back to top

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.

Narrowly missed the entry requirements on results day? If you've studied these subjects, we may take them into account:

Physics and Mathematics

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)
- Earth Sciences (4 year route including a Foundation Year at Carmel College) BSc (Hons)

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

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

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

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

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.

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.

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

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

TOEFL Paper

Grade 6 at Standard Level or grade 5 at Higher Level

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

LanguageCert

Grade 4 at Standard Level or grade 4 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
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.

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.

Back to top

Generated: 29 Mar 2025, 13:21