Geophysics (Geology) BSc (Hons)

COURSE DETAILS
- A level requirements: ABB
- UCAS code: F640
- Study mode: Full-time
- Length: 3 years

KEY DATES
- Apply by: 31 January 2024
- Starts: 23 September 2024

Course overview
Discover how planet Earth works and how we use physics to image its static and dynamic subsurface, from inner core to crust.

INTRODUCTION
This programme provides training in the principles and practice of geophysics with an emphasis on pure and practical physics.

The programme covers core topics in geology, geophysics and physics, plus a choice of advanced modules in geophysics. Major features include training in practical/applied geophysics, exploration geophysics (particularly seismology), planetary-scale geophysics and geophysical inverse theory.

This degree provides high-level training in geophysics with supporting geology, and includes fundamental university training in physics and mathematics. You don’t need to have studied geology before, and this degree therefore opens up a range of careers in geoscience. The programme provides particularly strong opportunities for careers in interpretation and processing of geophysical data (environmental, engineering, and exploration geophysics), and research areas related to geological applications.

Fieldwork currently involves field areas in Wales, Spain and Tenerife. You will work within one of our research groups to undertake a significant geophysical research project in your final year. This provides excellent training in research methodology for an academic or industrial research career.

Upon completion of your first year, it is possible to transfer to a Geology degree at the end of year one.

A number of the School’s degree programmes involve laboratory and field work. Fieldwork is carried out in various locations, ranging from inner city to coastal and mountainous environments. We
consider applications from prospective disabled students on the same basis as all other students, and reasonable adjustments will be considered to address barriers to access.

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WHAT YOU’LL LEARN

- Sedimentary rocks and fossils
- Geoscience and earth history
- Earth structure and plate tectonics
- Structural geology

- Field mapping techniques
- Seismology and computing
- Signal processing and seismic analysis

ACCREDITATION

This degree is accredited by the Geological Society of London, satisfying the requirements of Fellowship and Chartered Geologist status.
Course content
Discover what you’ll learn, what you’ll study, and how you’ll be taught and assessed.

YEAR ONE
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.

Fieldwork involves:
- 1 day in North England (Autumn)
- 8 days in Pembrokeshire (Easter)

COMPULSORY MODULES

STUDY SKILLS AND GIS (EARTH SCIENCE) (ENVS101)
Credits: 15 / Semester: whole session

This module introduces students to the key skills necessary to succeed on a University Earth Science course. It does this via a series of lectures, workshops, and tutorials, together with a geology fieldwork day and attendance at departmental seminars and talks. The lectures, towards the start of the first semester, cover academic integrity, exam skills, employability and 2D/3D visualisation. Tailored workshops cover Geographical Information Systems (GIS), Word, Excel and programming skills. Small-group (typically 4 to 8 students) tutorials are run by academic staff and cover essay writing, careers and employability. Students receive formative feedback on a practice essay in the first semester before completing one that is summatively assessed, set in the second semester. Academic tutors undertake personal development planning (PDP, i.e. careers and module selection advice) with each tutee. It is recommended that all students attend departmental seminars and the annual Herdman (student-led) conference as these help students integrate into the department and understand the sorts of research and applied activity that takes place.

SEDIMENTARY ROCKS AND FOSSILS (ENVS118)
Credits: 15 / Semester: semester 1

This module provides a basic introduction to sedimentology and palaeontology. Students learn about the origin of sediment, sedimentary processes and structures and the ways in which sediments are converted into solid rock. The course outlines the importance of sedimentary rocks for hydrocarbons, water and as construction materials. Students learn how to describe and interpret sedimentary deposits.

The palaeontology component introduces students to the major fossil groups and to the ways in which organisms can be preserved as fossils. It covers the importance of fossils for the study of evolution, environmental change and earth history. Students learn how to
describe fossils and how observations contribute to a broader understanding.
Students will be assessed by means of two practical tests and a theory examination.

**MATHEMATICS FOR PHYSICISTS I (PHYS107)**

**Credits: 15 / Semester: semester 1**

This module aims to provide all students with a common foundation in mathematics, necessary for studying the physical sciences and maths courses in later semesters. All topics will begin “from the ground up” by revising ideas which may be familiar from A-level before building on these concepts. In particular, the basic principles of differentiation and integration will be practised, before extending to functions of more than one variable.

**INTRODUCTION TO FIELD GEOLOGY (ENVS109)**

**Credits: 15 / Semester: semester 2**

This field module provides a basic training in field techniques and gives students practical experience working with a wide range of rock types and tectonic structures to solve geological problems. Students gain experience in recording field data and use their own data to interpret geological processes and environments. The module is assessed by means of an individual fieldwork portfolio, and a group synthesis poster completed after the field class.

**EARTH STRUCTURE AND PLATE TECTONICS (ENVS112)**

**Credits: 15 / Semester: semester 2**

The “Earth structure and plate tectonics“ module provides an introduction to the Earth and aim to teach students about:
1) the structure and composition of the Earth, the Earth’s gravitational and magnetic fields, and dynamics within the deep Earth;
2) the physics of Earth material and the geological time scale; and
3) plate tectonics.

**INTRODUCTION TO STRUCTURAL GEOLOGY AND GEOLOGICAL MAPS (ENVS156)**

**Credits: 15 / Semester: semester 2**

This module introduces a key subject within Earth Sciences, Structural Geology and Geological Mapping. In this module you will be introduced to geological structures from the micro to the mountain scale, and receive training in the geometrical techniques used to document and analyse them. You will also learn the basic principles of stress and strain which underpin a number of advanced Earth Science subjects and skills used in industry and research. Finally, the module will provide training in how to read and understand geological maps, and train your 3D visualisation skills by learning how to create geological cross-sections from maps, and how to stereographically plot 3D geological data. A combination of virtual lectures, practical skill development sessions, discussion sessions, and directed reading will help you navigate this important Earth Sciences topic. You will be assessed on the development of your practical skills through an end-of-semester open book practical
exam, and you will write an individual research paper on a specific topic in structural geology.

**MATHEMATICS FOR PHYSICISTS II (PHYS108)**

**Credits: 15 / Semester: semester 2**

This module introduces some of the mathematical techniques used in physics. For example, matrices, differential equations, vector calculus and series are discussed. The ideas are first presented in lectures and then the put into practice in problems classes, with support from demonstrators and the module lecturer. When you have finished this module, you should: Be able to manipulate matrices and use matrix methods to solve simultaneous linear equations. Be familiar with methods for solving first and second order differential equations in one variable. Have a basic knowledge of vector algebra. Have a basic understanding of series, in particular of Fourier series and transforms.

**EARTH MATERIALS (ENVS185)**

**Credits: 15 / Semester: semester 1**

This module will introduce and develop understanding of rock-forming minerals, and other key Earth materials in terms of their environments of formation, occurrence, and abundance. The module will focus on exploring the uses and societal significance of a range of Earth materials, especially those most important for providing sustainable and renewable energy resources and various societal infrastructure. The key practical skill of mineral description, identification and interpretation will be developed and applied throughout the module, to equip students with appropriate skills for many later geoscience modules.

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

**YEAR TWO**

In year two, students build on their skill set through further modules in geology, while building on fundamental physics and mathematics. A strong feature of year two is the introduction of geophysics modules in applied geophysics and seismology.

Fieldwork involves:
- 15 days Geological Mapping Training in Spain (Easter)

**COMPULSORY MODULES**

**GEOPHYSICAL MATHEMATICS AND POTENTIAL THEORY (ENVS201)**

**Credits: 15 / Semester: whole session**

This module re-enforces and develops mathematical skills from first year level, up to and
including solving partial differentiation. Many topics are covered in a short time – the aim is for students to be familiar with the methods and with fluency in application being a bonus. The second half of the module applies the mathematical methods to the development of potential theory, particularly for studying gravity and magnetism in both cartesian and spherical (planetary) geometry.

**APPLIED GEOPHYSICS (ENVS216)**

**Credits: 15 / Semester: semester 1**

This module provides an introduction to the principles and practise of all the main geophysical methods used for exploration purposes. This includes seismic refraction, seismic reflection, electrical methods, ground penetrating radar, gravity, and magnetics. Students will also gain understanding of when and where each method can be useful. Case studies will be used to highlight application of methods on all scales from shallow to deep, small to large and include uses within archaeology, engineering and geology. The module concludes with a synthesis of methods and how to approach site investigation. The module is lecture and problem session based with 50% continuous assessment from set homework assignments or problem sheets. The final exam constitutes the rest of the assessment.

**MINERALS, MAGMAS AND IGNEOUS GEOCHEMISTRY (ENVS247)**

**Credits: 15 / Semester: semester 1**

This module comprises a series of lectures and practical classes to facilitate students constructing their own learning in the fields of mineralogy, igneous petrology and geochemistry. The module’s learning outcomes are assessed by a mid-term class test, creating an individual A3 poster based on a topical case study, and a summative exam.

**DYNAMICS AND RELATIVITY (PHYS101)**

**Credits: 15 / Semester: semester 1**

The module provides an overview of Newtonian mechanics, continuing on from A-level courses. This includes: Newton’s laws of motion in linear and rotational circumstances, gravitation and Kepler’s laws of planetary motion. The theory of Relativity is then introduced, starting from a historical context, through Einstein’s postulates, leading to the Lorentz transformations.

**SEISMOLOGY AND COMPUTING (ENVS229)**

**Credits: 15 / Semester: semester 2**

This module introduces students to fundamentals of geophysics and seismology in the context of computer programming. Students will become familiar with methods used in geophysics and seismology, such as the types of seismic wave (body waves, surface waves), wave propagation and how to read/interpret seismic data, earthquake properties, and geodynamics. After an introductory two weeks of programming basics, students will then start to write scripts that simulate geophysical processes and analyse data. By the end of the module, students should have a good overview of the ways in which geophysics and seismology is applied in global and exploration settings, and in the study of earth processes.
ENVIRONMENTAL GEOPHYSICS (ENVS258)
Credits: 15 / Semester: semester 2
This module builds on the theory taught in Exploration Geophysics (ENVS216), by introducing a large amount of practical experience, data analysis and interpretation. Fieldwork will be run using input from industry professionals from RSK. The module will introduce principles of remote sensing, and give practical experience in GIS, electrical methods, seismics, ground penetrating radar, gravity and magnetics. Attention will be paid to how these different methods can be integrated to give a thorough understanding of a study site. The module will be assessed through a combination of continuous assessment such as short reports.

FIELD MAPPING TECHNIQUES (ENVS293)
Credits: 15 / Semester: semester 2
This module is a 10 day field class or online equivalent in which students learn various techniques required to assess the 3D geological evolution of an area. Training entails mapping exercises at different scales, designed to develop abilities to visualise geology and geomorphology in 3D, and to analyse and synthesise discrete observations to build a full four-dimensional model that includes the deep-time geological history of the area. Mapping techniques also include notebook construction, to complement any geological or geomorphological map, generalised vertical sections and lithostratigraphy, and the construction of cross-sections for 3D visualisation. These are all skills that are highly regarded and often required by geoscience employers, and this field class also provides the students with several skills required for final year independent research projects. Staff supervise all mapping and technical exercises and provide feedback throughout, but with progressively less direct staff supervision as the module progresses, to encourage independent work as student's skills develop. Group work, when possible, develops the individual's ability to work effectively in a team. Assessment takes place during the field class exercise.

OPTIONAL MODULES
WAVE PHENOMENA (PHYS103)
Credits: 15 / Semester: semester 2
Waves lie at the heart of physics, being phenomena associated with quantum wave mechanics, electromagnetic fields, communication, lasers and, spectacularly, gravitational waves. The course is divided into several major sections. The first, can be viewed as a pre-wave study of oscillations. This teaches the basics of oscillatory systems which form the
backbone of an understanding of waves. The second, deals with waves in abstract; solution of the wave equation and the principles of superposition. Finally, we look at examples of wave phenomena. These are the first introduction to what will be covered in the remainder of your degree.

**METAMORPHISM AND CRUSTAL EVOLUTION (ENVS212)**

Credits: 15 / Semester: semester 2

This module provides second or third year students with a foundation in the whole subject of metamorphism, from how and why atoms move around to form new minerals, through the textures of metamorphic rocks in hand specimen and how to interpret them, to the large scale plate tectonic phenomena that drive everything. Previous study of mineralogy, igneous and structural geology is assumed. Lectures are interactive – the lecturer presents the outline to the audience, takes questions from the audience and students will work up the lecture notes in their own time incorporating material from textbooks. Practicals involve thin section work (the only way to become familiar with metamorphic minerals and textures), hand specimen examination, calculations and the study of metamorphic and other maps of the Caledonian mountain belt in Britain and Ireland. Students will begin by studying the fundamental principles of metamorphic geology and gradually the scale of consideration enlarges until by halfway through the module, we see how metamorphism links to, and informs us about, past and present plate tectonics. We then return to some more detailed techniques for studying metamorphism, and finish by tying all the ideas together in a “case study” of the Caledonides of Britain and Ireland, the eroded remnants of Palaeozoic subduction and collision. Metamorphic geology plays a pivotal role in unravelling this story, as it does in unravelling the history of the entire Earth. Students are assessed during term in using practical skills (thin section drawing, calculations, use of various graphical and pictorial techniques) and through a final theory exam in knowledge and understanding of the subject.

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

In Year Three, students focus on advanced Geophysics, with core modules in seismic analysis, and applied geophysics (fieldwork). Optional modules in a range of geophysics modules include topics in global geophysics and geodynamics, data modelling, and earthquake and volcano seismology. Students also undertake a field, laboratory or computer-based geophysics research project for the duration of their final year.

Fieldwork:
- 10 days on the Isle of Man.

COMPULSORY MODULES

SIGNAL PROCESSING AND SEISMIC ANALYSIS (ENVS343)
Credits: 15 / Semester: semester 1

This module will provide an introduction to the fundamentals of signal processing and seismic interpretation. The module is taught through a combination of lectures, practical examples during computer-based practical sessions, and self-directed learning. Assessment for the module includes a conference style presentation on the analysis and interpretation of a real-world seismic dataset and a final exam. Successful students will develop understanding of the fundamental concepts and theory of signal processing. They will become familiar with modern seismic data analysis workflows, including correcting and enhancing data, leading to a final geologic interpretation.

GEOPHYSICAL PROJECT (ENVS300)
Credits: 30 / Semester: whole session

A pinnacle of your degree, this module will embed you within an active research group where you will undertake an individual and unique geophysical research project over the course of an academic year. The results of your analyses may well constitute an original scientific finding forming part of a future peer-reviewed paper appearing in an international publication. In addition to developing specific and general research skills, you will gain invaluable experience in communicating your topic and findings in both an oral and written format.

GEOPHYSICS FIELD SCHOOL (ENVS362)
Credits: 15 / Semester: semester 2

This module is a practical introduction to a range of techniques in exploration and environmental geophysics, and their application in industry and research. The students
receive field-based (or online, where necessary) training in geophysical techniques, including seismic, gravity, magnetic, and electrical methods. During the entire duration of the field class the students will work in teams, and will be required to undertake a geophysical survey. The learning outcomes include developing:

i) knowledge of geophysical instruments and their response to a variety of targets;
ii) an understanding of the principles, limitations and errors in geophysical data acquisition;
iii) an understanding of geophysical data analysis and interpretation;
iv) knowledge of the principles of geophysical survey designs;
v) an understanding of the standards required for reporting and presentation to peers and the general public. The students will benefit from being exposed to problem solving and a workflow analogous to working for a major exploration or geophysical engineering company.

**OPTIONAL MODULES**

**GLOBAL GEOPHYSICS AND GEODYNAMICS (ENVS398)**

Credits: 15 / Semester: semester 2

This module returns to the broad subject areas covered in “ENVS112 – Earth Structure and Plate Tectonics” but has a stronger quantitative and research skills focus. It will cover advanced topics in plate tectonics, global mantle and core geodynamics, Earth and planetary history and lithospheric-scale processes. A strong emphasis is placed on physical interactions between the primary layers of Earth leading to an integrational understanding of Earth's dynamics and evolution.

**APPLIED EARTHQUAKE AND VOLCANO SEISMOLOGY (ENVS388)**

Credits: 15 / Semester: semester 2

This module provides introduction to the fundamentals of applied seismology and essential training for students interested in academic or government careers in seismology. The course mainly deals with the analysis and interpretation of seismic data using arrays and networks of seismometers to constrain complex geological processes in tectonic and volcanic settings, and to evaluate earthquake and volcanic hazards. The course is research-led and provides a learning experience that reflects the process of creating knowledge through activities that mirrors modern research practices. Content will be delivered through a combination of traditional class-based lectures, research seminars and computer-based sessions. The students will have an opportunity to work with real-world seismic data, and will learn and apply state-of-the-art techniques used in operational settings for seismic and volcano monitoring.

**GEOPHYSICAL DATA MODELLING (ENVS386)**

Credits: 15 / Semester: semester 1
Geophysics talks are full of exciting colour figures showing the interior of the Earth. But are these pictures real? At best, they are only a simplified mathematical parameterisation of the true earth; at worst they can be misleading or plain wrong. This module provides the tools to construct such models by mathematical modelling of geophysical observations, but perhaps even more importantly, shows how such models can be interpreted, and provides understanding of their limitations. Mathematical foundations are given with sections on matrix analysis, optimisation theory and statistics, before going on to show how these are applied to geophysical problems. The concept of “non-uniqueness” is central—almost all geophysical modules require the estimation of an infinite (continuous) system from only finite data. Error estimation is considered in detail, in particular the reasons why most error estimates are close to worthless! Detailed examples are presented from all areas of geophysics, with a project to generate a model of the magnetic field of the planet Neptune. Examples also extend to modern developments, including links to “Big data” and Machine learning.

**OCEAN DYNAMICS (ENVS332)**

Credits: 15 / Semester: semester 1

Ocean dynamics addresses how the ocean and atmosphere circulate. Fundamental questions are addressed, such as how heat, salt, and dissolved substances are transported, how jets and weather systems emerge on our planet, why there are western boundary currents in the ocean, and how seafloor topography shapes the ocean circulation. Students will improve their understanding of how the ocean and atmosphere behave, including comparing the importance of different physical processes in the climate system. The module is delivered via lectures and formative workshops to gain skills at problem solving. There is significant mathematical content, requiring familiarity with calculus and algebra. The module is assessed through two online tests (25% each) and an essay (50%).

**SEDIMENTARY PROCESSES AND DEPOSITIONAL ENVIRONMENTS (ENVS219)**

Credits: 15 / Semester: semester 1

Sedimentary successions are the only archive from which we can accurately decode the Earth’s past. Using physical, chemical and biological information we can reconstruct past climates, tectonics and depositional environments. This module teaches the fundamental principles of interpreting sedimentary stratigraphy, and develops students’ abilities to recognize sedimentary textures and use them to interpret ancient depositional environments.

**SIMULATING ENVIRONMENTAL SYSTEMS (ENVS397)**

Credits: 15 / Semester: semester 2

This module will teach students to write and use simple numerical forward models of environmental systems, including geomorphic, geophysical, oceanographic and ecological models. Successful students will develop important transferrable coding and numeracy skills through a series of lectures, seminars and practical work. The module will be assessed through practical work only, with formative feedback throughout to help develop the necessary skills.
HOW YOU’LL LEARN
You will typically receive 15-20 hours of formal teaching each week, and complete between 50 and 100 days of residential fieldwork over the course of their programme. In years three and four you will carry out independent research projects on a topic and location of your choice. All projects are supervised by a member of staff who will meet with you on a weekly, or more frequent, basis.

A number of the School’s degree programmes involve laboratory and field work. The field work is carried out in various locations, ranging from inner city to coastal and mountainous environments. We consider applications from prospective students with disabilities on the same basis as all other students, and reasonable adjustments will be considered to address barriers to access.

HOW YOU'RE ASSESSED
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. Assessment is via tasks that mirror those graduate students are likely to undertake working as professional geoscientists. For example, generating and interpreting quantitative spatial data, with appropriate consideration of inherent uncertainty, is a key task and necessary skill for professional environmental geoscientists, and this skill is developed and assessed on several programme modules, especially field and lab-based modules. As well as being authentic in terms of the underlying purpose of the assessed task, assessment tasks are also authentic in terms of format, intended audience, resources used, and collaborative team elements. For example, team-based environmental assessment work with professional format delivery appropriate for presentation to management-level colleagues using state-of-the-art field, lab or IT resources is central to assessments in field classes.

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.
Careers and employability

The programme is particularly strong for careers in geophysical data analysis, and research areas related to global geophysics and planetary science.

89.5% OF ENVIRONMENTAL SCIENCES STUDENTS ARE IN WORK AND/OR FURTHER STUDY 15 MONTHS AFTER GRADUATION.

Discover Uni, 2018-19.

There has never been a better time to study Earth sciences. Many of the fundamental questions of our times will be answered by geoscientists, as we seek to provide sustainable resources for the world’s population, as well as predict and mitigate climate change and natural hazards by building a better understanding of the planet on which we live.

The majority of our recent graduates have gained employment within a degree-related field or continued within further education after graduation. We have close links with geoscience and environmental industries ensuring that our degrees properly equip you for future employment. The truly interdisciplinary nature of our degrees additionally makes graduates in Earth sciences highly sought after by other employment sectors.

RECENT EMPLOYERS

- Geological Surveys in the UK and abroad
- Hydrocarbon and support industries: ExxonMobil, BP, Shell, Geotrace, Geokinetics, Neftex, Robertson, Deloitte, CGG, Osiris, PGS

PREPARING YOU FOR FUTURE SUCCESS

At Liverpool, our goal is to support you to build your intellectual, social, and cultural capital so that you graduate as a socially-conscious global citizen who is prepared for future success. We achieve this by:

- Embedding employability within your curriculum, through the modules you take and the opportunities to gain real-world experience offered by many of our courses.

student and graduate employers as well as our global alumni.
- Providing you with the latest tools and skills to thrive in a competitive world, including access to Handshake, a platform which allows you to create your personalised job shortlist and apply with ease.
- Supporting you through our peer-to-peer led Careers Studio, where our career
• Providing you with opportunities to gain experience and develop connections with people and organisations, including coaches provide you with tailored advice and support.
Fees and funding

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

TUITION FEES

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<th>UK fees (applies to Channel Islands, Isle of Man and Republic of Ireland)</th>
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<tr>
<td>Full-time place, per year</td>
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<td>Year abroad fee</td>
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<tr>
<th>International fees</th>
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<td>Full-time place, per year</td>
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<td>Year abroad fee</td>
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Fees stated are for the 2023-24 academic year and may rise for 2024-25.
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 tuition fees, funding and student finance.

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 includes costs for a lab coat, geological field kit, and sustenance during compulsory field trips.

Find out more about the additional study costs that may apply to this course.

SCHOLARSHIPS AND BURSARIES

We offer a range of scholarships and bursaries to help cover tuition fees and help with living expenses while at university.
Scholarships and bursaries you can apply for from the United Kingdom
## Entry requirements

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

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<th>Your qualification</th>
<th>Requirements</th>
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<tr>
<td></td>
<td>About our typical entry requirements</td>
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<tr>
<td><strong>A levels</strong></td>
<td>ABB 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.</td>
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<tr>
<td><strong>GCSE</strong></td>
<td>4/C in English and 4/C in Mathematics</td>
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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:
- Earth Sciences entry route leading to BSc (Hons) (4 year route including a Foundation Year at Carmel College)
- Physical Sciences entry route leading to BSc (Hons) (4 year route including a Foundation Year at Carmel College)
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<th>Your Qualification requirements</th>
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<tr>
<td>Mathematics and Physics A level. For applicants from England: For science A levels that include the separately graded practical endorsement, a &quot;Pass&quot; is required.</td>
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<tr>
<td>BTEC Level 3 National Extended Diploma</td>
<td>D*DD in relevant Diploma.</td>
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<tr>
<td>International Baccalaureate</td>
<td>33 points with no score less than 4, inc. Higher Level Mathematics and Physics</td>
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<tr>
<td>Irish Leaving Certificate</td>
<td>H1, H2, H2, H3, H3 including H2 or above in Mathematics and Physics</td>
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<tr>
<td>Scottish Higher/Advanced Higher</td>
<td>Not accepted without Advanced Highers at ABB including Maths and Physics</td>
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<tr>
<td>Welsh Baccalaureate Advanced</td>
<td>Acceptable at grade B including Mathematics and Physics A Levels with grades AB</td>
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<td>Access</td>
<td>Considered if taking a relevant subject. 45 Level 3 credits in graded units, including 30 at Distinction and a further 15 with at least Merit. 15 Distinctions are required in each of Mathematics and Physics. GCSE English and Mathematics grade C/4 or above also required.</td>
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<td>International qualifications</td>
<td>Many countries have a different education system to that of the UK, meaning your qualifications may not meet our entry requirements. Completing your Foundation Certificate, such as that offered by the University of Liverpool International College, means you’re guaranteed a place on your chosen course.</td>
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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.