Geophysics MSci

Geophysics is the study of the physical processes that shape the Earth, including its composition, evolution and dynamics. We tackle this through a multidisciplinary programme ranging from understanding Earth materials, through the internal processes that drive plate tectonics, volcanoes and earthquakes, to understanding atmosphere, weather and climate. This provides a firm foundation in geology, physics, mathematics and computing.

Key information

Programme starts
September 2020

Location
London, Bloomsbury

Degree benefits

Our department delivers world-leading research embracing the origins and history of life, Earth's composition and structure, earthquake and volcanic hazards, and past and present climate change, and these are fully integrated within our taught programme.

UCL has state-of-the-art geophysical instruments including the new technique of ground penetrating radar (GPR), a new magnetometer/gradiometer (for archaeological and environmental surveys) and new, modern seismics.

The department has one of the highest staff/student ratios in the country, resulting in small classes. Teaching is delivered by all of our research-active staff guaranteeing up-to-the-minute understanding and providing opportunities to take part in cutting-edge research activities.

We have recently moved into the renovated Kathleen Lonsdale Building with new, world-class facilities include bespoke teaching laboratories, new microscope facilities and student study areas, all in the heart of the department, next to staff offices and research laboratories.

Accreditation

This programme is accredited by the Geological Society. Undergraduate students may join the Geological Society as a Candidate Fellow and can become a Fellow of the Society upon graduation. A Fellow of the Society with relevant postgraduate experience in the practice of geology has the opportunity to apply for Chartered Geologist (CGeol) status.

Degree structure

In each year of your degree you will take a number of individual modules, normally valued at 15 or 30 credits, adding up to a total of 120 credits for the year. Modules are assessed in the academic year in which they are taken. The balance of compulsory and optional modules varies from programme to programme and year to year. A 30-credit module is considered equivalent to 15 credits in the European Credit Transfer System (ECTS).

In their first two years all students study a common geophysics syllabus covering the fundamentals of mathematics, mechanics, electricity and magnetism, Earth materials, structural geology and tectonics, global geophysics and Earth processes. Theoretical studies are integrated with a large element of illustrative practical work both in the laboratory and in the field.

In the third and fourth years there are more advanced modules in seismology, geodynamics and global tectonics and there is the opportunity to specialise in, for example, the environmental aspects of the subject such as groundwater resources.

We take a modern approach to teaching with modules based around laboratory practicals and theory workshops. Fieldwork provides a unique opportunity to develop independent and team skills and problem-solving abilities.

The first three years of the MSci programme are identical to the BSc programme. However, the additional fourth year of the MSci allows for a major individual research project and advanced optional modules, providing extra depth and breadth of knowledge.

YEAR ONE

Core or compulsory module(s)

Classical Mechanics
Dynamic Earth
Earth Materials
From Petrology to Petrogenesis (including Cornwall fieldwork)
Mathematical Methods I
Mathematical Methods II
Structural Geology and Tectonics
The Earth

Optional modules

All first-year modules are compulsory.

YEAR TWO

Core or compulsory module(s)

Electricity and Magnetism
Global Geophysics
Numerical Methods for Earth Sciences
Mathematical Methods II
Structural Geology and Tectonics

Optional modules

You will select 45 credits from the following options:
Igneous Petrology
Isotope Geology
Maps, Images and Structures (including fieldwork)
Surface Processes and Structures (including fieldtrip)
Principles of Climate

or any appropriate modules in Physics, Maths, Statistics or Chemistry
YEAR THREE

Core or compulsory module(s)

- Field Geophysics (including fieldwork)
- Geodynamics and Global Tectonics
- Seismology I
- Seismology II

Optional modules

- You will select 60 credits from the following:
- Advanced Geochemistry
- Climate and Energy
- Crustal Dynamics, Mountain Building and Basin Evolution (including Betics fieldwork)
- Earth Resources and Sustainability
- Groundwater Science
- Marine Geology
- Ocean Physics and Climate Change
- or any appropriate modules in Physics, Maths, Statistics or Chemistry (subject to course conflict)

FINAL YEAR

Core or compulsory module(s)

- Earth and Planetary System Science (including fieldwork)
- Independent MSci Project

Optional modules

- You will select 60 credits from the following:
- Deep Earth and Planetary Modelling
- Earth and Planetary Materials
- Earthquake Seismology and Earthquake Hazards
- Melting and Volcanism
- Physical Volcanology and Volcanic Hazard
- Tectonic Geomorphology
- You may take up to 30 credits outside the department.

Your learning

We use a mixture of lectures, practical classes, field courses, directed reading, problem-orientated learning, private study and tutorials to enable you to gain the theoretical knowledge and practical skills demanded by the programme, as well as to develop key transferable skills such as critical analysis, report writing, team working and organisational skills.

Assessment

You will be assessed by a combination of written examinations, practical examinations, coursework, independent project reports and sometimes an oral examination.

Your career

Together with subject-specific skills, geophysics graduates have a wide range of transferable skills, developed through fieldwork, computer modelling and independent research, which are highly valued by employers in general, offering opportunities for careers in the City, commerce and government.

All our students are encouraged and helped towards making informed career choices. We have excellent relationships with many employers in diverse aspects of the Earth and planetary sciences, and students are actively guided towards achieving their potential at UCL in preparation for their future careers.

Your application

Application for admission should be made through UCAS (the Universities and Colleges Admissions Service). Applicants currently at school or college will be provided with advice on the process; however, applicants who have left school or who are based outside the United Kingdom may obtain information directly from UCAS.

We will assess your application on the basis of your performance, or predicted performance academically, but we will also be looking for an indication of how your interest in natural and Earth sciences has developed, what aspects particularly appeal to you, and whether you have undertaken any research or reading to find out about the subject matter you wish to study.

We normally reach a decision on making an offer on the basis of the application alone. If you are resident in the UK and have been made an offer you will be invited to a Post Offer Open Day. This visit will include introductory talks on UCL Earth Sciences and our degree programmes, a tour of the department and UCL and a question and answer session.
**Entry requirements**

**A LEVELS**
**Standard Offer:** AAB. Mathematics and Physics required.

**Contextual Offer:** BBB. Mathematics and Physics required.

**GCSE**
English Language and Mathematics at grade C or 5. For UK-based students, a grade C or 5 or equivalent in a foreign language (other than Ancient Greek, Biblical Hebrew or Latin) is required. UCL provides opportunities to meet the foreign language requirement following enrolment, further details at: www.ucl.ac.uk/ug-reqs

**IB DIPLOMA**
**Standard Offer:** 36 points. A score of 17 points in three higher level subjects including Mathematics and Physics, with no score lower than 5.

**Contextual Offer:** 32 points. A score of 15 points in three higher level subjects including Mathematics and Physics, with no score lower than 5.

**CONTEXTUAL OFFERS – ACCESS UCL SCHEME**
As part of our commitment to increasing participation from underrepresented groups, students may be eligible for a contextual offer as part of the Access UCL scheme. For more information see www.ucl.ac.uk/prospectus

**OTHER QUALIFICATIONS**
UCL considers a wide range of UK and international qualifications for entry into its undergraduate programmes. Full details are given at: www.ucl.ac.uk/otherquals

**UNDERGRADUATE PREPARATORY CERTIFICATES (International foundation courses)**
UCL Undergraduate Preparatory Certificates (UPCs) are intensive one-year foundation courses for international students of high academic potential who are aiming to gain access to undergraduate degree programmes at UCL and other top UK universities.

Typical UPC students will be high achievers in a 12-year school system which does not meet the standard required for direct entry to UCL.

For more information see: www.ucl.ac.uk/upc.

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**TUITION FEES**
The fees indicated are for undergraduate entry in the 2019/20 academic year. The UK/EU fees shown are for the first year of the programme at UCL only. Fees for future years may be subject to an inflationary increase. The Overseas fees shown are the fees that will be charged to 2019/20 entrants for each year of study on the programme, unless otherwise indicated below.

- **UK & EU:** £9,250 (2019/20)
- **Overseas:** £26,740 (2019/20)

Full details of UCL’s tuition fees, tuition fee policy and potential increases to fees can be found on the UCL Students website.

**Additional costs**
Students will be required to pay for transportation to overseas field trips and food. (The department covers accommodation and transport costs in the UK.)

**FUNDING**
Various funding options are available, including student loans, scholarships and bursaries. UK students whose household income falls below a certain level may also be eligible for a non-repayable bursary or for certain scholarships. Please see the Fees and funding pages for more details.

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**Brexit**
For up-to-date information relating to specific key questions following the UK’s decision to leave the EU, please refer to: www.ucl.ac.uk/brexit

**Disclaimer**
This information is for guidance only. It should not be construed as advice nor relied upon and does not form part of any contract. For more information on UCL’s degree programmes please see the UCL Undergraduate Prospectus at www.ucl.ac.uk/prospectus