



# Environmental and Earth Sciences Undergraduate Degrees 2024

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## Come and meet us

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## Connect with us

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# Discover the major challenges facing environments globally

Develop your knowledge of how the Earth system works, learn new laboratory and research skills and join us on amazing field trips to Italy, Croatia or Switzerland. You'll study how the environment has evolved to its present state and how it might change in the future, giving you the understanding you need to tackle some of the major challenges facing the world.

Awareness of major global challenges is mounting, including concern over climate change, water and soil pollution, food production and the management of hazards such as flooding or volcanic eruptions. Studying the environmental and Earth sciences uniquely equips you to address challenges like these, by applying your understanding and practical experience gained across a range of scientific disciplines.

Join us at Lancaster Environment Centre and become part of a community of students, academics, researchers, scientists and commercial enterprises, working together to address today's biggest environmental challenges.



# Made for learning

There has never been a better time to study the environmental and the Earth sciences. At Lancaster, you will become part of the world-renowned, multidisciplinary Lancaster Environment Centre and be taught by leading experts in their fields.

Our team will provide you with fundamental understanding and hands-on experience related to the environment, giving you the key skills required for a wide range of careers inside or beyond the environment sector.

Lancaster offered the first environmental science degree in the country in the 1960s, representing a long track record of excellence, and since then our staff have helped to shape this rapidly evolving subject both in the UK and internationally.

## Flexible and interdisciplinary

We believe that you will excel in your degree when you have the opportunity to explore in depth the areas of the environmental or Earth sciences that interest you the most. Your first year of study will give you the foundation, knowledge and skills you need before specialising in subsequent years of your degree.

What's more, studying in a multidisciplinary department gives you the unique opportunity to expand the breadth of your degree by taking complementary modules in ecology or geography.

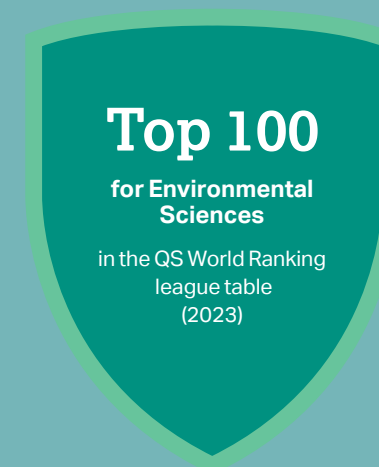
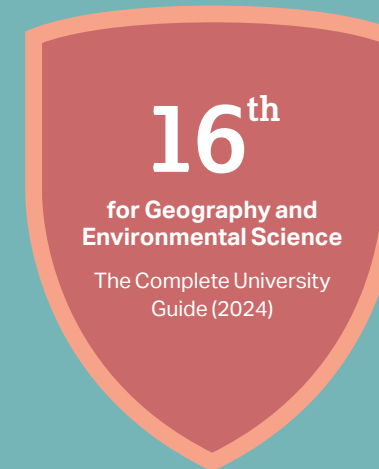
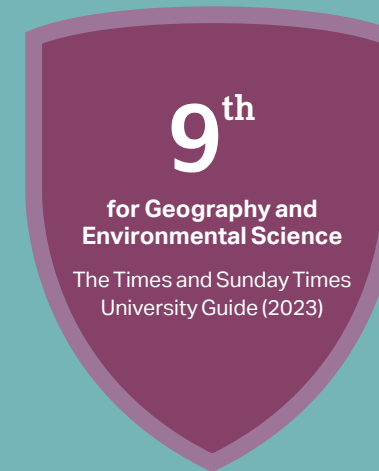
## Practical study

You won't just learn in lecture theatres at Lancaster! We believe that the environmental and Earth sciences are best appreciated through hands-on practical experience, whether that is in the field, in our teaching laboratories or in computer classes. Practical learning enables you to put theory into practice, providing a deeper understanding of the subject, whilst developing skills which will be of use throughout your degree and future career.

## Links with employers

Our in-house Enterprise and Business Partnerships team engages with hundreds of different organisations, giving you fantastic opportunities to work alongside these partners through internships or even during your dissertation project.

We give you the opportunity to enhance your career-related skills and experience during your degree, which is crucial for standing out in the graduate jobs market.





# The place for the researcher

Our lecturers are renowned experts at the forefront of their fields and are shaping our understanding of the world. Their work feeds into our degree programmes, ensuring that your education is informed by cutting-edge thinking. During your degree, you'll conduct your own independent research project where you'll benefit from the research experience of our internationally renowned staff and the latest technology used in research laboratories or field sites.

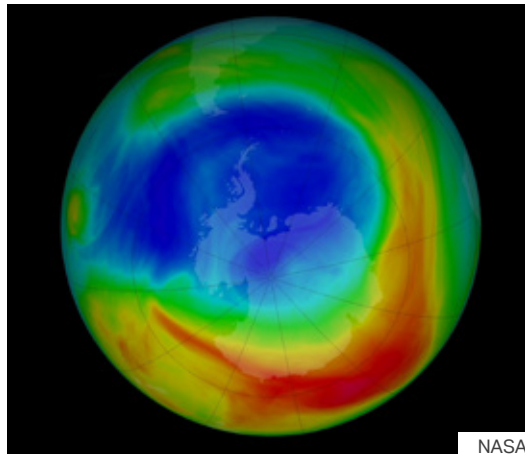
## Emerging concerns over Earth's ozone layer

Research led by Dr Ryan Hossaini has highlighted emerging concerns over the production and emission of uncontrolled ozone-depleting chemicals. Depletion of the ozone layer – which shields the Earth from harmful UV radiation – gained prominence in the 1980s following the discovery of the Antarctic 'ozone hole' and has remained a persistent environmental issue since.

The research examined 'very short-lived substances', a class of ozone-depleting chemicals whose production is not controlled by the UN Montreal Protocol – the international treaty designed to safeguard the ozone layer. With colleagues from the US National Oceanic and Atmospheric Administration, Ryan's group discovered that the atmospheric abundance of some of these chemicals has more than doubled since the early 2000s. Analysis of global atmospheric measurements, combined with state-of-the-art computer modelling, revealed rapidly increasing industrial emissions of these chemicals from Asia, consistent with economic growth in the region.

Owing to the Montreal Protocol, production of many ozone-depleting chemicals (e.g. chlorofluorocarbons, CFCs) is prohibited and the ozone layer is beginning to show signs of 'recovery'. Emissions of uncontrolled very short-lived substances are expected to increase in the next decade however, and this may inhibit full recovery to pre-depletion levels.

The research team's findings have sparked new debate on the threat posed to the ozone layer as the Montreal Protocol's benefits are being offset by emissions of uncontrolled ozone-depleting substances.



NASA

## Wind direction can boost solar panel efficiency

Research led by Dr Alona Armstrong, has shown that a southerly wind can increase the electricity output of a solar park by up to 43%. The increased output is caused by the cooling effect of the wind on the photovoltaic panels counteracting the negative impact of the solar panels warming up.

The work was conducted by LEC Master's student Damon Waterworth and established that, as expected, solar radiation has the greatest influence over electricity output with relative humidity also playing an important role. However, when isolated from the influence of other meteorological variables, wind direction can vary electricity output by 20% to 43%, with greater differences occurring when solar radiation and electricity output are higher.

Understanding the effect of different weather conditions on the output of renewable energy technology allows more accurate predictions of electricity generation. This is increasingly important as the proportion of renewables in our energy mix increases. Until now however, there have been limited field studies that investigate the impact of different weather conditions on solar panels in the real world and the impact of wind speed and direction on solar panel efficiency has been entirely overlooked. Consequently, this research highlights the need to better understand wind impacts in the field and help inform management of the electricity grid.

The research was undertaken at Westmill Solar Park ([www.westmillsolar.coop/](http://www.westmillsolar.coop/)), Oxfordshire, using meteorology data collected by Dr Armstrong and electricity output data provided by Westmill Solar Cooperative Limited.



## New insights into Santorini, the restless Greek volcano

Research involving Dr Hugh Tuffen has shown that the catastrophic Minoan eruption of the Greek island volcano Santorini (around 1600 BC) followed remarkably swift ascent of a large volume of magma in the crust beneath. The eruption, which was hundreds of times larger than Eyjafjallajökull, Iceland, 2010, caused much of the island to collapse into the sea, heralding the end of the Minoan civilisation and possibly inspiring the legend of the lost island of Atlantis.

Millimetre-sized crystals found within the erupted rocks record how magma rose towards the surface before the eruption. The research team, involving Hugh and colleagues from Clermont-Ferrand (France), identified that a huge volume of magma, stored in the mid-crust (8–12 km depth), rose to within 4–6 km of the surface less than two years before the eruption. This information is key to understanding current unrest at Santorini, as much of the island uplifted by several centimetres in 2011–12, accompanied by a swarm of earthquakes.

Does this unrest herald an impending eruption? LEC graduate Dr John Browning, now a lecturer in Chile, has modelled the physics of chamber roof failure at Santorini, as eruptions can only occur once pressurised magma can break a pathway to the surface. Thankfully, John's model shows that even a small eruption remains highly unlikely, and far greater unrest would precede a Minoan-scale eruption. Hugh and John's work will help hazard mitigation at Santorini and other active volcanoes worldwide.



# Your study



## Assessment

The assessment process varies across modules, but includes laboratory reports, essays, independent project reports, group presentations, multiple-choice tests and exams. Assessment is an ongoing process, rather than being left solely until the end of the degree. This means we are able to offer feedback to you throughout your degree and, equally as important, it relieves pressure on you when modules are examined at the end of each year.

## Academic support

We foster a highly supportive learning environment, making sure that you are fully supported to achieve your full academic potential. This includes access to our Student Learning Developers, who offer workshops and advice on improving your academic skills, and also assigning you an Academic Tutor who you will meet with regularly throughout your degree to discuss your progress.

Our academics are leaders in their fields of research and deliver enthusiastic and engaging teaching through a range of methods.

## Lectures

Lectures provide an introduction to the key issues and findings in each topic and are delivered by an expert in that particular field. They usually last either one or two hours, and should be complemented by further independent study including reading relevant literature on the topic. We provide online reading lists, suggesting suitable books and journals that are available either digitally or in print from our library.

## Tutorials

Tutorials are usually one-hour sessions where you will be encouraged to discuss your learning with a small group of fellow students, under the guidance of a tutor. During these in depth study sessions, you will become used to speaking out, listening to others and learning to increasingly present yourself with confidence. You'll become experienced in being part of a team and explore the topics under study together.

## Practical classes

These are designed to help you discover the key principles underpinning the topic of study, whilst also developing your skills which you will be able to put to use throughout your degree and future career. Practical classes could range from computer-modelling sessions, through fieldwork, to the opportunity to conduct experiments in our laboratories.





# Equipped for achievement

Lancaster Environment Centre is one of the University's largest departments, with newly enhanced facilities, teaching rooms, laboratories and social spaces.



## Field and laboratory facilities

The final year dissertation provides you with the opportunity to work alongside our ongoing research projects or perhaps develop a project of your own. You may have the opportunity to work at research field sites in the UK or overseas. Your dissertation may also give you hands-on experience with cutting-edge analytical equipment and techniques, including mass spectrometers and ion chromatographs to analyse the chemical composition of water or soil samples, gas chromatographs to analyse greenhouse gases released to the atmosphere, or data science techniques to analyse satellite images of ice sheet melting.

## Meteorological station

We run the Hazelrigg Meteorological Station, a unique field and weather station located just one kilometre from the University campus. Measurements from the site help the Met Office validate weather forecasts and climate models. You may have the opportunity to visit the station as part of your studies or as a volunteer taking measurements that contribute to official Met Office records.



## An environmental community

The newly refurbished atrium at the heart of Lancaster Environment Centre forms a home for our community of students, environmental researchers, government scientists and enterprises, working together to address today's biggest environmental challenges. The eco-friendly design of this space extends from the 100% recycled flooring, to the glazed roof, designed to reduce the need for lighting within this communal space.

## State-of-the-art laboratories

Spread over two floors in a new £4m building, our teaching laboratories can house over 200 students and are the location for many practical classes. These will provide you with hands-on experience that puts theory into practice. You can also use this facility as part of your dissertation project, for example undertaking controlled experiments or processing field samples.

## Geographic Information Systems

You will have access to the latest versions of GIS and image processing software, as well as a wide variety of digital data resources. We also have a dedicated GIS Officer who offers support if you are using GIS as part of your coursework or dissertation project.



# Learning on location

We take full advantage of our natural surroundings to create amazing fieldwork experiences, in addition to the opportunities to travel the world with residential and overseas field trips.

Fieldwork is a fascinating way to develop your practical skills. You'll gain hands-on experience of a wide range of environmental, ecological and geological situations that will place your studies in the context of real-world issues.

## Local field excursions

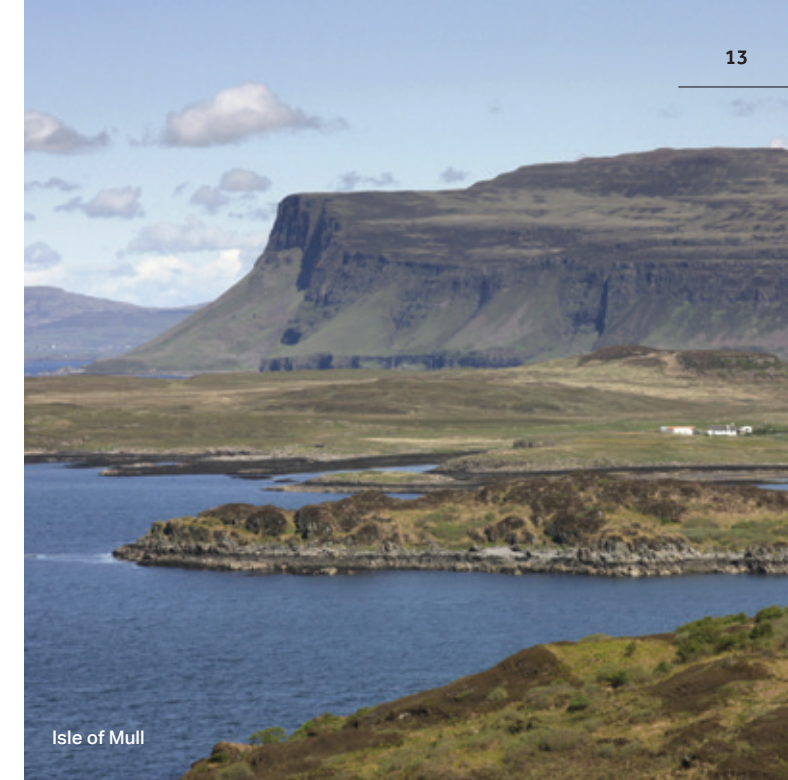
Nestled between the Lake District World Heritage Site, Yorkshire Dales National Park, Areas of Outstanding Natural Beauty and close to major cities such as Manchester, Lancaster is perfectly placed to study environmental, geographical and geological processes.

## Isle of Mull

Study geologic and geomorphological processes, and develop your Earth science field skills, during our field trip to the Isle of Mull in Scotland. During this trip, you will learn how to collect field data in order to make a geologic map. You will also visit some of the oldest rock formations in the UK and will learn about a wide range of geologic terrains. You will gain excellent practical skills including mapping techniques, how to plot structural data and be able to learn about aspects of British geological history.

## White Scar Caves

Put your knowledge of hydrology into practice in our first year visit to White Scar Caves in North Yorkshire, and learn how to measure water flow within karstic systems and the properties of rocks and soils as they influence the hydrological cycle.



Isle of Mull



White Scar Caves

## Hazelrigg

Visit Hazelrigg, our very own field and weather station, in your second year to make your own weather observations, or in your third year to study the radiative balance of the atmosphere.

## Yorkshire Dales

Unravel the geological history of the area and learn geoscience techniques as part of a second-year module.

## Carrock Fell

Spend a week in the nearby Lake District World Heritage Site, learning key field and laboratory skills needed to succeed in the environmental and Earth sciences. Based at Carrock Fell, you will collect primary data from a disused tungsten mine, and analyse and interpret these data to assess the present and future impacts the mine will have on stream water quality.

**Please note: Availability of field options is subject to pre-requisites.**



### Italy

Visit Mount Etna, Europe's largest active volcano, and study the complex processes that take place both on the surface and beneath volcanoes. During this intensive week-long field trip, you will explore a number of physical volcanic processes, including lava flow emplacement, explosive events and the evolution of a basaltic volcano. In addition, you will also evaluate methods of managing volcanic hazards on heavily populated active volcanoes.



### Croatia

Visit Croatia with us and explore the Istrian Peninsula, an idyllic landscape of olive groves, forests, wineries and beaches. This environment is strongly governed by its geology, biodiversity and position between differing climates, whilst Istria is also the setting of dramatic socio-economic, political and environmental changes. During this trip, you will focus on the challenges of environmental management, particularly of water resources, in this unique landscape.



For more information, please visit [www.lancaster.ac.uk/env-sci](http://www.lancaster.ac.uk/env-sci)

### Switzerland

Gain an in-depth understanding of Alpine environments during our intensive week-long residential field course in south-west Switzerland. During the course you will collect significant amounts of field data focused on one of four interconnected study themes spanning glaciology, soils, ecology and hydrology. The experience provides an inspiring foundation into the science and understanding of how these globally sensitive ecosystems are responding to change.





# A place for Adam



**Adam Bowen**  
BSc (Hons) Environmental Science with  
Industrial Placement

# “

### What was it like coming to Lancaster for the first time?

Having visited a number of universities after completing my A levels, Lancaster really stood out for its department and the friendliness of staff and students. I particularly liked how LEC was a dedicated community for students studying environmental disciplines and wasn't stretched between other departments, allowing you to meet a range of students across other degree programmes. Lancaster also has the most friendly and supportive community! Everyone I spoke to was passionate about their course, hobbies and student life and now having studied here, I can confirm you'll be joining an amazing university.

### What have you enjoyed most about your course?

The breadth and variety of study has to be my favourite aspect of the course. From day one, you'll be immersed in a range of environmental concepts with options to extend your learning into specific topics as you progress through your degree. Everyone in LEC also takes the same modules in first year, giving you an excellent grounding in many key concepts and a chance to meet like-minded people early on. Numerous opportunities for fieldwork have also allowed me to put my learning into practice beyond campus, with trips in my first year to White Scar Caves and Arnside AONB. As an Industrial Placement

student, having the opportunity to gain some real-world experience with an external employer has also been invaluable. Working alongside industry professionals in a sector of my choice taught me key life skills and exposed me to the job market early on, giving me a head start over my peers when it comes to applying for graduate jobs.

### How does your degree differ from others?

As an Environmental Science student, you gain experience from a range of disciplines including geography, biology, chemistry and ecology. You aren't limited to one subject area and this freedom allows you to tailor your degree to the areas that interest you most! As a science, the course also teaches you many technical, analytical and maths-based skills, giving you an edge over other students and making you very employable.

Knowing my lecturers are also academic researchers gives me confidence my learning is tailored around the latest scientific discoveries, with relevant and up to date case studies playing a fundamental part of most modules. Learning from some of the best staff in my field is really inspiring as a student, and by joining Lancaster you will have access to this same community and support. Overall, I know that as an Environmental Science graduate from Lancaster University, I will be well prepared for a future in the environmental field.

# ”



# Gain real-world experience

## Volunteering

Our Green Lancaster scheme provides you with plenty of opportunities to become more sustainable and promote positive environmental choices. The many nature reserves near to Lancaster also offer numerous volunteering opportunities. Within Lancaster Environment Centre, we offer you volunteering opportunities either with external partners specifically in the environment sector, or as a research assistant in our own laboratories or research groups.

## Beyond LEC seminar series

We run a series of fortnightly seminars throughout the year in which graduate employers and recent graduates offer insights into sectors in which our students often take up careers. These include information and advice on what these careers entail, how to identify opportunities, and how to make the most of your skills and experiences.

## Eco-innovation

Eco-innovation is the development of new products, processes or services that support business growth with a positive environmental impact. We offer a second year module in eco-innovation that will not only provide you with knowledge of this area and how the concept relates to business opportunities, but will also give you the insights to understand how organisations apply eco-innovation into their business planning. As part of the module, you will learn how to create proposals for eco-innovation and prepare presentations for a panel of experts.

## Placement year

Taking our placement degree provides the opportunity to spend your third year working in a paid, professional role as a full-time employee in the type of organisation that you might aspire to join when you graduate. Being able to demonstrate professional experience of working on a range of important and interesting projects, where you potentially get to apply the theory you've learned in your first and second year, is invaluable when competing in the job market. It's also a great way to work out what you do, or don't, want to do once you complete your studies!

Finding and securing a placement opportunity is down to you, just as it would be when applying for a graduate vacancy. However, we will provide you with plenty of support and guidance in writing your CV, applying for positions, preparing you for interviews and even taking part in assessment centres.

We also have well established and long-standing links with many potential employers which means that we'll have a number of placement opportunities just for Lancaster students.

## Internships

Students have the opportunity to gain important work experience by applying to do paid summer internships. Past LEC students have been employed on projects as diverse as applying 'Internet of Things' technologies to the agricultural sector and upcycling old bathroom fixtures into garden planters.





# Discover your world beyond borders



Enhance your studies, boost your self-confidence and immerse yourself in the culture of another country as part of our exciting opportunities to study overseas.

## Study abroad

Broaden your academic horizons by spending your third year studying at a partner university overseas, for example in North America or Australasia. For BSc students, a quarter of your studies abroad will contribute to your Lancaster degree, allowing you to explore other, broader options and the specific expertise of the partner university. Return to UK in your fourth year to study your final year. For MSci students, your year abroad studies contribute fully to your Lancaster degree, and you'll study similar modules to those available at Lancaster, whilst gaining an understanding of a different culture and society. Return to UK in your fourth year to study your final year.

## Other opportunities abroad

There are other options for students who are not on the Study Abroad programme, e.g. shorter travel options during the summer holidays. For more information, please visit [www.lancaster.ac.uk/study/global-experiences/](http://www.lancaster.ac.uk/study/global-experiences/)

We also hope to maintain and have a number of new opportunities for short study placements across Europe and beyond. These opportunities, which you would be able to sign up for, will be announced as they become available.

## Student support

Studying on the other side of the world can be a daunting prospect. In addition to having a dedicated advisor, who will help you decide where to go and what to study, you'll also have the opportunity to network with students who have studied abroad previously and can provide you with a wealth of practical tips. Additionally, our International Office is on hand to help you with application forms and the financial and legal aspects of studying abroad.

## Fees and funding

Details about the costs of Study Abroad, which can be used as a guideline, can be found at: [www.lancaster.ac.uk/study-abroad/costs/](http://www.lancaster.ac.uk/study-abroad/costs/)



# A place for Harry



**Harry Barnes**  
BSc Earth & Environmental Science (Study Abroad)

# “

## What is it about Lancaster that you particularly love?

I've found that studying here at Lancaster has provided me with so many opportunities to tailor my degree to my specific interests within LEC, and there is a very interdisciplinary approach taken within the department which is great to let you get a feeling for which areas of study you would like to focus on after first year. Lancaster itself is also an ideal place to study an environment-based degree, as there are so many field locations in the local area that demonstrate what is being taught in lectures. The college system is also one of the things I love most about Lancaster, as you really get a sense of belonging since so many events and sports teams are college-based, and each college has its own unique character and atmosphere.

## How have you managed to adapt to university life at Lancaster?

Coming to university in the middle of a pandemic has not been ideal, however as lockdown restrictions have lifted, it has been a fantastic experience to get involved in university life, and Lancaster has proved to be a perfect city for students such as myself - not too big that it is overwhelming, but still very lively with so many different things to do. There are also so many different societies to get involved with that there will almost definitely be a society for anyone and everyone, which makes meeting new people and making friends a lot easier.

## Do you have opportunities to expand your learning beyond the campus?

As mentioned, the local area provides opportunity for many different field trips. For example, field trips to White Scar Caves and Arnside Knott take place during first year and are a great introduction to foundational field measurement skills and allow for the application of lecture concepts to be applied in practice, as well as being a great way to meet and get to know others studying the course. There are also so many different study abroad opportunities within the department, and I had the pleasure of spending a year studying abroad in Canada, where the friends I made and places I travelled to made the experience so worthwhile and enjoyable!

## What are your plans for the future?

After having such a great time in Canada, I would love to be able to return to continue my studies there or elsewhere in the world, since studying abroad has really opened my eyes to how much more of the world there is to see beyond the UK. After doing a couple of modules in the subject across my first and second years, I've really found myself interested in hydrology and hydrogeology, so undertaking an internship or graduate job in this field is also on the cards - I like to keep my options open!

# ”



# Hello Future

From environmental consultancy through the water industry to the Met Office, a degree in the environmental and Earth sciences provides a platform to enter a wide range of different professions spanning the private, public and third sectors.

When you graduate from Lancaster, you will take with you not only the subject knowledge from your degree but also the skills and experiences valued by employers across a wide range of different sectors. We also provide many opportunities that focus on the development of your career aspirations and your preparation for life after Lancaster, ranging from networking with recent alumni to training for job interviews.

Examples of the types of career path that our recent graduates have followed include:

- + Air Quality Consultant
- + Chemical Analyst
- + Environmental Engineer
- + Environmental Regulator
- + Geotechnical Engineer
- + Hydrogeophysics Technician
- + Meteorologist
- + Nuclear Waste Scientist
- + PhD Researcher
- + Recycling Site Chemist
- + Sustainability Consultant
- + Waste Water Engineer
- + Graduate scheme, for example in the Water Industry

Whatever your career aspirations may be, or even if you're still not quite sure, we're here to support you to reach your goals.

You will undertake a module in employability skills during your degree, giving you excellent preparation for applying to graduate-level jobs and graduate schemes, and our dedicated Careers Service in the University is here to assist you every step of the way. From helping you make a lasting impression with your CV to ensuring you are well prepared for interviews and assessment centres, they are able to offer you tailored and personalised support. What's more, they provide lifelong careers support to our graduates so, if you need us, we will always be here to help.





# Earth and Environmental Science

Degree	Entry Requirements	Required subject information
<b>BSc Hons Earth and Environmental Science</b> FF68 3 years	<b>A levels</b> ABB  <b>BTEC</b> DDM <sup>1</sup>	<b>Required subjects</b> + One science A level from the following: Biology, Chemistry, Computing, Environmental Science, Geography, Geology, Human Biology, Mathematics, Physics or Psychology  Please note, for students who do not have A level Chemistry or an equivalent qualification, we require you to take our Introduction to Environmental Chemistry module in the first Year.
<b>BSc Hons Earth and Environmental Science (Placement Year)</b> FF78 4 years with Year 3 spent on placement	<b>International Baccalaureate</b> 32 points overall with 16 points from the best three Higher Level courses	
<b>BSc Hons Earth and Environmental Science (Study Abroad)</b> FF7V 4 years with Year 3 spent overseas at a partner university	<b>A levels</b> AAB  <b>BTEC</b> DDD <sup>1</sup>	For students who do not have A level Mathematics (or equivalent), we require you to take numerical skills modules in the first Year. If you have GCSE Mathematics at grade 5 or 6, you will take Numerical Skills I and Numerical Skills II. If you have GCSE Mathematics at grade 7 or above then you take only Numerical Skills II  + GCSE Mathematics grade B or 5  + GCSE English Language grade C or 4
<b>MSci Hons Earth and Environmental Science</b> 4R71 4 years	<b>International Baccalaureate</b> 35 points overall with 16 points from the best three Higher Level courses	
<b>MSci Hons Earth and Environmental Science (Study Abroad)</b> FF86 4 years with Year 3 spent overseas at a partner university		

We welcome applications from students with combined or other internationally recognised qualifications. For more information, please contact the Admissions Office directly on **+44 (0)1524 592028** or [ugadmissions@lancaster.ac.uk](mailto:ugadmissions@lancaster.ac.uk)

<sup>1</sup>Must include sufficient science and we require Distinctions in the majority of relevant science units. Please contact the Admissions Office for further advice.



# Earth and Environmental Science

## Degree overview

Geoscientists are increasingly recognised as playing a crucial role in meeting global challenges such as climate change, sustainable development, resource provision, and natural hazards. By placing your geoscience training within the broader context of the environment, you will gain knowledge of both the challenges and the potential solutions.

Covering both natural and man-made environments, you will explore the main factors and processes that control today's environment, how the environment has evolved to its current state and how environmental conditions may change in the future.

In addition, the degree draws upon the expertise of a number of our staff who specialise in Earth science including volcanologists, geophysicists, hydrogeologists and glaciologists, who deliver an exciting range of specialist topics to choose from.

Your first year will address many of the fundamental themes of the Earth and environmental sciences, from understanding geology to learning about the atmosphere, weather and climate. Specialisation begins in the second year when we introduce Earth science-focused topics, and this degree gives you the flexibility to focus on a specific topic area, be it geological hazards, soil science, environmental radioactivity or glacial systems.

Core modules in the second year prepare you for your third year dissertation project, which is an opportunity to research a subject that really interests you. You may choose a project with a substantial fieldwork component or, alternatively, conduct laboratory-based research or computer modelling.

Second and third year modules build upon the themes in year one, and you will have the opportunity to take part in popular field courses, including to Mount Etna in Sicily. There, you will study volcanic processes and learn how the local population can manage the impacts of volcanic phenomena. You will also have the opportunity to engage in fieldwork at Carrock Fell in the scenic Lake District World Heritage Site and take further optional residential modules, from studying glacial processes in Switzerland to environmental challenges in Croatia.

Throughout your degree, considerable weight is placed upon the transferable skills that are highly valued by potential employers. For example, in addition to your subject knowledge, you will also gain communication and information technology skills and will become familiar with data handling and environmental sampling and analysis.

### Year 1

#### Core modules

- + Atmosphere, Weather and Climate
- + Biogeochemical Cycles
- + Environmental Processes and Systems
- + Geology
- + Global Environmental Challenges
- + Hydrology: Water in the Environment
- + Natural Hazards
- + The Earth's Interior
- + Placement Preparation (Placement Year only)

#### Optional/skills modules (depending on existing qualifications)

- + Introduction to Environmental Chemistry ♦
- + Numerical Skills I ♦
- + Numerical Skills II ♦
- + Plus further modules from across Lancaster Environment Centre

### Year 2

#### Core modules

- + Aquatic Biogeochemistry
- + Beyond LEC: Steps to career success
- + Environmental Field Course
- + Experimental Design and Analysis
- + Geologic Mapping Field Course
- + Geoscience in Practice
- + Soil Science
- + Work Based Learning (Placement Year only)

#### Plus a selection of optional modules that include

- + Atmospheric Science
- + Catchment Hydrology
- + Energy, Economy and the Environment
- + Environmental Data Visualisation and Analysis
- + Introduction to Eco-Innovation
- + Populations to Ecosystems
- + Principles of Biodiversity Conservation
- + Spatial Analysis and Geographic Information Systems

### Year 3

#### Core modules

- + Introduction to Geophysical Techniques
- + Dissertation\*

#### Plus a selection of optional modules that may include

- + Alpine Environmental Processes Field Course
- + Coastal Processes
- + Environmental Remote Sensing and Image Processing
- + Geological Hazards
- + Glacial Systems
- + Global Change and the Earth System
- + Hydrogeology
- + Hydrological Processes Field Course
- + Issues in Conservation Biology
- + The Causes and Consequences of Environmental Radioactivity
- + Volcanic Processes Field Course
- + Water Resources Management

### Year 4

#### For Placement Year students

- The core and optional modules described above for Year 3
- + Work Based Learning Reflection

#### For MSci students

##### Core modules

- + Physical Volcanology
- + Research Dissertation Project

#### Plus a selection of optional modules that may include

- + Contaminated Land and Remediation
- + Environmental Aspects of Renewable Energy
- + Geoinformatics and Protection

♦ Students who do not have A level Chemistry or an equivalent qualification are required to take Introduction to Environmental Chemistry. Students who do not have A Level Mathematics or equivalent are required to take either one or two Numerical Skills courses depending on their GCSE-level qualification

\* Dissertation with External Partner available to FF68 and 4R71 students only





# Environmental Science

Degree	Entry Requirements	Required subject information
<b>BSc Hons Environmental Science</b> F750 3 years	<b>A levels</b> ABB  <b>BTEC</b> DDM <sup>1</sup>  <b>International Baccalaureate</b> 32 points overall with 16 points from the best three Higher Level courses	<b>Required subjects</b> + One science A level from the following: Biology, Chemistry, Computing, Environmental Science, Geography, Geology, Human Biology, Mathematics, Physics or Psychology  Please note, for students who do not have A level Chemistry or an equivalent qualification, we require you to take our Introduction to Environmental Chemistry module in the first year
<b>BSc Environmental Science (Placement Year)</b> F752 4 years with Year 3 spent on placement		
<b>BSc Hons Environmental Science (Study Abroad)</b> F756 4 years with Year 3 spent overseas at a partner university	<b>A levels</b> AAB  <b>BTEC</b> DDD <sup>1</sup>  <b>International Baccalaureate</b> 35 points overall with 16 points from the best three Higher Level courses	For students who do not have A level Mathematics (or equivalent), we require you to take numerical skills modules in the first year. If you have GCSE Mathematics at grade 5 or 6, you will take Numerical Skills I and Numerical Skills II. If you have GCSE Mathematics at grade 7 or above then you take only Numerical Skills II
<b>MSci Hons Environmental Science</b> F850 4 years		
<b>MSci Hons Environmental Science (Study Abroad)</b> F851 4 years with Year 3 spent overseas at a partner university		+ GCSE Mathematics grade B or 5  + GCSE English Language grade C or 4

We welcome applications from students with combined or other internationally recognised qualifications. For more information, please contact the Admissions Office directly on **+44 (0)1524 592028** or [ugadmissions@lancaster.ac.uk](mailto:ugadmissions@lancaster.ac.uk)

<sup>1</sup>Must include sufficient science and we require Distinctions in the majority of relevant science units. Please contact the Admissions Office for further advice.





# Environmental Science

## Degree overview

This flexible programme draws from a wide range of scientific disciplines to build a degree that matches your interests and career aspirations.

You will learn about the individual components of the Earth system, including the atmosphere, aquatic and terrestrial ecosystems and the role of living organisms within the biosphere, alongside how these individual components interact with each other. The degree focuses on natural environments and also on how human society has modified the Earth system.

Throughout your degree you will be taught by internationally-renowned academics, and will have access to our state-of-the-art laboratories which offer excellent facilities for practical work.

Your first year will address many of the fundamental themes of environmental science, from understanding hydrology and flood risk to learning about weather and climate. Second year modules build on themes introduced in Year 1, whilst allowing you to apply your knowledge in a residential fieldwork module at Carrock Fell in the Lake District World Heritage Site.

This week-long module allows you to learn about the environment first-hand in an informal and practical setting. Additionally, you also have the opportunity to participate in other exciting fieldwork opportunities throughout your degree, from learning about hydrological processes in Devon to the management of alpine environments in Switzerland.

From your second year onwards, you begin to specialise by choosing modules that interest you the most, perhaps selecting modules in the areas of energy, ecology or remote sensing. In addition, you will begin to prepare for your third year dissertation project, which gives you an opportunity to research a subject that really interests you. You may choose a project with a substantial fieldwork component or, alternatively, conduct your dissertation through laboratory research or computer modelling.

Throughout your degree, considerable weight is placed upon the transferable skills that are highly valued by potential employers. For example, in addition to your subject knowledge, you will also gain communication and information technology skills and will become familiar with data handling and environmental sampling and analysis.

### Year 1

#### Core modules

- + Atmosphere, Weather and Climate
- + Biogeochemical Cycles
- + Environmental Processes and Systems
- + Geology
- + Global Environmental Challenges
- + Hydrology: Water in the Environment
- + Natural Hazards
- + The Earth's Interior
- + Placement Preparation (Placement Year only)

#### Optional/skills modules (depending on existing qualifications)

- + Introduction to Environmental Chemistry ♦
- + Numerical Skills I ♦
- + Numerical Skills II ♦
- + Plus further modules from across Lancaster Environment Centre

### Year 2

#### Core modules

- + Aquatic Biogeochemistry
- + Atmospheric Science
- + Beyond LEC: Steps to career success
- + Catchment Hydrology

- + Environmental Data Visualisation and Analysis
- + Environmental Field Course
- + Experimental Design and Analysis
- + Work Based Learning Preparation (Placement Year only)

#### Plus a selection of optional modules that include

- + Energy, Economy and the Environment
- + Introduction to Eco-Innovation
- + Populations to Ecosystems
- + Principles of Biodiversity Conservation
- + Soil Science
- + Spatial Analysis and Geographic Information Systems

### Year 3

#### Core modules

- + Dissertation\*

#### Plus a selection of optional modules that may include

- + Alpine Environmental Processes Field Course
- + Climate and Society
- + Coastal Processes
- + Environmental Remote Sensing and Image Processing
- + Geological Hazards
- + Glacial Systems
- + Global Change and the Earth System

- + Hydrogeology
- + Hydrological Processes Field Course
- + Introduction to Geophysical Techniques
- + Issues in Conservation Biology
- + Lakes, Rivers and Estuaries
- + Sustainable Agriculture
- + The Causes and Consequences of Environmental Radioactivity
- + Water Resources Management
- + Water, Society and the Istrian Landscape Field Course

### Year 4

#### For Placement Year students

- The core and optional modules described above for Year 3
- + Work Based Learning Reflection

#### For MSci students

##### Core modules

- + Research Dissertation Project

##### Plus a selection of optional modules that may include

- + Contaminated Land Remediation
- + Environmental Aspects of Renewable Energy
- + Groundwater Resources and Protection
- + Lake Ecology
- + Behaviour of Pollutants in the Environment

♦ Students who do not have A level Chemistry or an equivalent qualification are required to take Introduction to Environmental Chemistry. Students who do not have A Level Mathematics or equivalent are required to take either one or two Numerical Skills courses depending on their GCSE-level qualification

\* Dissertation with External Partner available to F750 and F850 students only

For more information, please visit [www.lancaster.ac.uk/env-sci](http://www.lancaster.ac.uk/env-sci)





# Come and meet us

## Open days

Join us at one of our open days to experience what life as a student at Lancaster is like. You will have the opportunity to see what facilities are available and explore our beautiful 560 acre campus including our award-winning accommodation, newly refurbished library, the Students' Union and sports facilities. You can also visit Lancaster Environment Centre where you have the opportunity to chat with current staff and students about studying the environmental and Earth sciences.

## Campus tours

We organise regular campus tours to give you a flavour of life at Lancaster. The tour is designed to acquaint you with our friendly campus, showing you our award-winning student accommodation, social venues, library and a lot more.

You can book onto open days and campus tours at [www.lancaster.ac.uk/visitus](http://www.lancaster.ac.uk/visitus)

## Offer holder events

We will be offering both online and in-person events. If you are offered a place on one of our degrees you will automatically be invited to attend one of our offer holder events in January to April. It's not compulsory, but we highly recommend you take part to get a feel for our community. At these events, you will have the opportunity to hear all about the University and department, watch live demonstrations and speak with academics and current students. Offer holder events are designed to give you a real taste of what it is like to be a student with us at Lancaster. You will receive further information about these events over the next few months.

## Visiting us

Lancaster is very well served by road, rail and air networks and is close to major cities such as Manchester and Liverpool. More information about visiting the University can be found at [www.lancaster.ac.uk/travel](http://www.lancaster.ac.uk/travel)



## Disclaimer

The information provided in this brochure relates primarily to 2024/25 entry to the University and every effort has been taken to ensure the information is correct at the time of printing in June 2023. The University will use all reasonable effort to deliver the course as described but the University reserves the right to make changes after going to print. You are advised to consult our website at: [www.lancaster.ac.uk/study](http://www.lancaster.ac.uk/study) for up-to-date information before you submit your application.

Further legal information may be found at: [www.lancaster.ac.uk/compliance/legalnotice](http://www.lancaster.ac.uk/compliance/legalnotice)

## Image credits

Many of the photographs in this brochure were taken during fieldwork or on campus. Thanks to our students and staff who took these photographs and appear in them.





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