Graduate School for the Environment

Joined-up thinking for a better world

Masters degrees and doctoral research
Graduate School for the Environment

Our Graduate School for the Environment harnesses the power of three of the world’s foremost research organisations to give you the best possible chance of enjoying a productive, impactful and influential career.

Pioneering World Leaders

Combining the expertise, resources and connections of Lancaster Environment Centre, Rothamsted Research and the Centre for Ecology & Hydrology, the Graduate School for the Environment is an exciting collaboration of three world leaders in environmental research and practice. We believe that environmental issues and challenges do not confine themselves to one country, that they cannot simply be addressed by one scientific discipline, and that solutions cannot be found by researchers, governments and businesses working in isolation. Instead we advocate an international, interdisciplinary and inter-agency approach.

The Graduate School for the Environment is a world-leading academic centre with a truly global outlook and a similarly global network of real-world contacts. It is a place where you will become part of a broad community of like-minded researchers, academics, scientists, agencies and businesses to develop the skills and expertise for a successful career.

Lancaster is ranked in the top 10 in three major UK league tables in 2018 (6th The Times 2018, 9th The Guardian 2018, and 9th The Complete University Guide 2018)

Our research is ranked 3rd in the UK for real-world impact, with 83% being world-leading and internationally excellent

Lancaster was awarded a coveted Gold ranking in the 2017 Teaching Excellence Framework
World-class resources

The Graduate School for the Environment has the size, scope and infrastructure to offer you an unrivalled level of support, accommodating almost every imaginable environmental research interest.

We can call on a collective pool of hundreds of experts, provide you with access to cutting-edge facilities and can curate the kind of long-term, national-scale data that fuels the most powerful of research.

Flexible and engaging degrees

Our programmes have been designed to make the most of our broad range of natural and social sciences expertise – with the opportunity for you to work in collaboration with staff across our sites.

On our taught programmes, you will have the opportunity to tailor your module choices to suit your particular interests and a particular highlight is the wide array of research opportunities for your dissertation project. Working with research-active academics, using state-of-the-art facilities or conducting fieldwork, you will enjoy access to a network of global research institutes and business partnerships.

Interdisciplinary excellence

Environmental challenges can only be properly addressed when scientists, researchers, government agencies and businesses come together to pool their ideas and devise practical solutions. So it’s no coincidence that our community is comprised of researchers from across the natural and social sciences who are leading the international research agenda in key areas. These same experts are the ones who will teach and supervise you.

Global outlook and impact

The Graduate School for the Environment has a strong international focus, which informs everything we do. This means you could find yourself engaged in research work in any corner of the globe.

Our outward-looking focus makes us better placed to tackle environmental issues at an international level. It also provides you with a world of opportunity, giving you the kind of global perspective that is valued by employers and a network of contacts in the UK and overseas.

Career gateway

When you leave the Graduate School for the Environment, you will take with you the kind of practical experience that employers value, an extensive network of contacts and a qualification tailor-made to secure the career you want.

We work with a wide range of organisations from research institutes to small and medium-sized enterprises – every one of which could prove to be a potential employer. What’s more, our Enterprise and Business Partnership team at Lancaster aims to get you working with one of these during your studies.

Real-world focus

Everything we do at the Graduate School for the Environment is driven by the realities of the outside world.

We will encourage you to look outwards and engage with the global environmental community. That might mean conducting fieldwork either in the UK or overseas, taking up a placement with one of our research partners or pursuing a company-based project in a particular industry.
Facilities

Lancaster Environment Centre, Rothamsted Research and the Centre for Ecology & Hydrology all provide excellent facilities for research. Together, as the Graduate School for the Environment, we offer you a wonderful range of opportunities.

State-of-the-art laboratories
We have a broad array of laboratories, specially equipped and staffed so that you can perform highly focused and effective experimental and analytical work.

Leading research facilities
From glasshouses to insectaries, biomolecular analysis to mass spectrometry, we offer a wide range of specialist facilities to our postgraduate students.

Widespread field sites
During your studies here, you can conduct fieldwork of all types across the UK and at an exciting range of overseas locations.

Cutting-edge technologies
Whether in the laboratory or the field, our researchers have access to specialist equipment that can transform the effectiveness and scope of their work.

Rich data resources
You can gain access to a truly unique set of large-scale long-maintained data sets and take advantage of our powerful analytical, modelling and statistical capabilities.
Our MSc Conservation and Biodiversity course offers great flexibility, with a wide choice of study topics from across disciplines, enabling you to construct a programme that suits your individual interests and career ambitions in this increasingly important field. You will have the opportunity to gain a solid foundation in the key theoretical issues, such as wildlife population dynamics and conservation biology, and learn how these are applied to real-world problems, such as managing habitats or dealing with wildlife-human conflicts. Additionally, you will gain and develop the key skills that are valued by employers, such as problem solving, report writing, data analysis and presentation skills.

You will complete six taught modules, giving you the opportunity to interact with a wide range of expert specialists, including lake ecologists, food security biologists and Earth observation geographers. Several of these modules include field excursions to the beautiful and topographically varied countryside around Lancaster and beyond. If you wish to travel further afield, we have research projects and partners across the globe that provide exciting possibilities when you are choosing your dissertation subject. As an alternative to a traditional dissertation, you could instead choose to complete a six month research placement with a private sector company, government body or voluntary sector organisation.

If you are looking to broaden your academic skill set and provided me with a very strong foundation for my future career. A great range of modules are available so you can tailor your studies towards your own interests and passions.”

Caitlin Godfrey, MSc Conservation and Biodiversity

Core
- Dissertation Project

Example optional modules
- Approaches in Environmental Data Analytics
- Chemical Risk Assessment
- Conservation Biology
- Contaminated Land and Remediation
- Crop Protection
- Data Analysis and Interpretation
- Data Assimilation and Integration
- Environmental Aspects of Renewable Energy
- Environmental Governance and Management
- Environmental Sampling and Analysis for Trace Organics
- Food Security, Agriculture and Climate Change
- Geoinformatics
- Global Change and the Earth System
- Habitat Management
- Lake Ecology
- Modelling Environmental Processes
- Numerical Skills
- Political Ecology of International Development
- Pollution Microbiology
- Sustainable Soil Management
- Using the National Vegetation Classification
- Wildlife Monitoring Techniques
- Wildlife Population Ecology

Further information can be found at www.lancaster.ac.uk/gse/masters

MSc Environmental Management

The Earth’s resources are under strain from a growing population. Now, more than ever, we need to monitor, manage and maintain our environment. This vocationally relevant degree provides you with an in-depth critical understanding of today’s major environmental challenges. You can keep your learning broad or you can specialise in one of four areas: water, energy, food security or pollution.

Several modules include field excursions to the area around Lancaster and beyond. Additionally, you will undertake a dissertation project, which will enhance your practical and analytical skills and give you the chance to apply your learning to a real-world challenge. Our many research projects and partners across the globe provide exciting possibilities when you are choosing your dissertation subject. As an alternative to a traditional dissertation, you could instead choose to complete a six month research placement with a private sector company, government body or voluntary sector organisation.

This very popular course will equip you to pursue a broad range of careers including environmental monitoring, resource management and consultancy.

Core
- Dissertation Project

Example optional modules
- Approaches in Environmental Data Analytics
- Climate Change and Society
- Conservation Biology
- Data Analysis and Interpretation
- Data Analysis and Programming Skills
- Energy Conversion
- Environmental Law
- Environmental Sampling and Analysis for Trace Organics
- Geoinformatics
- Geological Hazards
- Global Change and the Earth System
- Habitat Management
- Modelling Environmental Processes
- Numerical Skills
- Perspectives on Environment and Development
- Physical Volcanology
- Political Ecology of International Development
- Pollution Microbiology
- Research Methods in the Social Sciences
- Using the National Vegetation Classification
- Wildlife Population Ecology
- Wildlife Monitoring Techniques

Further information can be found at www.lancaster.ac.uk/gse/masters
MA/MSc Environment and Development

The need for sustainable development is a global concern. This flexible degree prepares you to address the challenges faced in safeguarding the planet’s ecosystems in a fast developing world and is ideal if you want to pursue a career in the environmental field, in the private, public, or not-for-profit sectors. It can be taken as either an MA or MSc depending on your dissertation topic.

You will complete six taught modules and a dissertation research project, with individual supervision from a research active expert. We offer great flexibility with modules spanning the natural and social sciences from sustainable soil management and conservation biology to environmental law and globalisation. This enables you to construct a degree that fits your interests and career ambitions and to apply your learning in a wider cultural context.

You will gain a solid foundation in the key theoretical issues around environment and development whilst gaining the practical problem solving skills valued by employers. There are also opportunities to gain work experience through one of our many business and research partners and to carry out fieldwork in the UK and internationally.

Your dissertation project forms a substantial part of your degree; it will enhance your practical and analytical skills and give you the opportunity to apply your learning to a real-world challenge. Dissertation topics are available in both environment and development themes with our many research projects and partners across the globe providing exciting possibilities.

I love how diverse, and yet highly interconnected, the content is within my course with a mixture of natural and social science, as well as having the opportunity to take Law and Maths modules. I think this provides the perfect background for going into a career facing global environmental issues.”

Susannah Yielding, MSc Environment and Development

MSc Flood and Coastal Risk Management

CIWEM accredited course

The UK is currently experiencing a greater number of rainstorms than previously. Society is recognising the importance of understanding and managing resultant flood risk in the face of this increased frequency of extreme weather and climate change.

In partnership with JBA Consulting, a specialist water environment and flood risk management consultancy, we have developed accredited training for water and environmental practitioners focused on the application of technical skills and best practice techniques. The objective is to strengthen your knowledge and career development prospects in the flood and coastal risk management sector.

The programme is fully accredited by the Chartered Institution of Water and Environmental Management (CIWEM).

Core
• Dissertation
• Catchment Hydraulics: Processes, Structures and Modelling
• Forecasting and Extreme Event Response
• Coastal Erosion and Flood Risk Management
• Sustainable Floodplain Management and Restoration

Optional modules
• Catchment Protection (field course)
• Groundwater Resources and Protection
Further information can be found at www.lancaster.ac.uk/gse/masters

This course is designed for part-time study and can be taken over a period of two to five years.

You can also study Flood and Coastal Risk Management as a Postgraduate Certificate or Postgraduate Diploma. See page 17 for more information.
MSc Sustainable Water Management

CIWEM accredited course

With a strong emphasis on practical study, you will be taught by both Graduate School for the Environment staff and industry professionals, and will gain the key skills and professional training required for a rewarding career as a practitioner or researcher.

You will study six modules and complete a dissertation project. The core modules have been professionally accredited by the Chartered Institution of Water and Environmental Management (CIWEM) and will provide you with the key skills of a water professional by addressing the principles of catchment hydrology, sustainable surface water management, groundwater assessment, methods of catchment protection, principles of lake ecology, managing coastal flooding, flood forecasting, the design of river structures and the restoration of river channels.

Practical work is an important component of the programme, with modules including challenging fieldwork in Cumbrian and Lancashire catchments, and laboratory work involving the use of flumes, water quality analyses and computer models. We encourage you to undertake your dissertation project with an external partner in the water sector or as an integral part of our ongoing research activities in water resources, and you will be supervised by one of our active researchers with relevant expertise.

MSc Food Security Distance-learning course

Our Masters in Food Security is a distance-learning programme designed for people with an interest in the global food system and for professionals in the food supply industry. It will equip you with the specialist skills and knowledge to engage with one of the most significant challenges currently facing a growing human population: making and supplying enough food for all to sustain an active healthy lifestyle. The course is highly flexible so that you can fit study around your day job. Teaching is done largely online; all materials are supplied and you can work through them at your own pace. You will also have the opportunity to meet tutors and fellow students at short workshops during the year.

The programme starts with an introductory module, which covers a broad range of issues related to food security. After that, you will develop a breadth of knowledge and depth of expertise by studying an additional seven modules. These modules allow you to develop specialist knowledge of the factors impacting upon food security and environmental effects on food production. Finally, you will cement your learning and put theory into practice in a major research project. Your dissertation will be guided by a supervisor from Lancaster and will normally be undertaken with an industry partner.

Upon graduation, you will have a range of specialist skills, advanced knowledge, and experience, allowing you to engage with and tackle the food challenges of the 21st century.

Core

- Food Challenges for the 21st Century – the impending storm
- Literature Review
- Dissertation Project

Optional modules

- Environmental Stress and Crop Production
- Plant Defence and Crop Protection
- Crop Biotechnology
- Crop Production Science I
- Soil Science
- Ethical Food Systems

Further information can be found at www.lancaster.ac.uk/lec/foodchallenges

You can also study Food Security as a Postgraduate Certificate or Postgraduate Diploma. See page 17 for more information.
Our Masters by Research programmes offer you a good preparation for PhD study, they are a postgraduate qualification in their own right and they provide excellent preparation for research careers in the public and private sectors. They will allow you to immerse yourself in a subject and benefit from the kind of specific skills training you need to be able to investigate it. You will be expected to conduct innovative, original research and then to write up an extended thesis with a view to submitting it for publication.

If you are interested in pursuing this route, we will work with you to help design the most appropriate research project for you – making sure that you benefit from all the Graduate School for the Environment has to offer.

As a Masters by Research student, you may also be co-supervised by an external research, policy or business partner.

Further information can be found at: www.lancaster.ac.uk/gse/masters

MSc Volcanology and Geological Hazards

Geological hazards, such as volcanic activity, threaten millions of people worldwide. Therefore improved hazard mitigation is a high priority.

Our well-established course allows you to study alongside leading volcanologists in one of the largest groups of environmental scientists in the UK.

You will study six taught modules which include core modules in physical volcanology and other geological hazards, plus optional modules which provide broader learning and practical skills in areas of particular benefit to aspiring volcanologists and natural hazards experts. As well as gaining a strong theoretical grounding, you will spend time in the laboratory and in the field. We offer a field excursion to study volcanic rocks in the nearby Lake District as well as a highly popular field course to Mount Etna in Italy.

You will join our active volcanology group and conduct an independent dissertation research project under supervision from an internationally recognised researcher, taking advantage of our well-equipped experimental and geochemical laboratories. Within the group, there are additional opportunities to participate in seminars, workshops and discussions.

This course is ideal preparation for PhD research or work in the environment sector, and is suitable for students with a wide range of first degrees including Geography, Geology, Environmental Science and Physics.

Core
- Dissertation Project
- Geological Hazards
- Physical Volcanology

Example optional modules
- Approaches in Environmental Data Analytics
- Chemical Risk Assessment
- Climate Change and Society
- Contaminated Land and Remediation
- Data Analysis and Interpretation
- Data Assimilation and Integration
- Environmental Governance and Management
- Geoinformatics
- Global Change and the Earth System
- Groundwater Resources and Protection
- Modelling Environmental Processes
- Numerical Skills
- Volcanic Process Field Course

Further information can be found at www.lancaster.ac.uk/gse/masters

Photo: Steve Lane
PhD study

As part of our vibrant community of PhD students, you will make a direct contribution to the world-class research output of the Graduate School for the Environment and develop the skills you need to enjoy a rewarding career in your chosen field.

Whatever your field of interest in relation to the environment – whether in the natural or social sciences – the size and scope of the Graduate School for the Environment means that you are guaranteed to find a suitably stimulating project to work on.

Support structure

You will immediately become a valued member of one of our research groups, each of which is led by one of our internationally respected academics and supported by an array of postdoctoral research associates and technicians.

You will make your personal contribution to the group and be taught the research skills you need – under the guidance of one or more supervisors specifically chosen to suit your area of interest. It is with the support of your supervisors and your research group colleagues that you will be able to extract full value from your time at the Graduate School for the Environment.

Industry-focused PhDs

We also offer a range of industry-focused PhDs, in which you will work in partnership with a particular business, learning practical real-world skills as well as cutting-edge academic research techniques. These may be fully funded within the Centre for Global Eco-Innovation.

Our research community is made up of a series of groups set up to address specific areas of environmental research:

- Atmosphere, Climate and Pollution
- Critical Geographies
- Earth Science
- Ecology and Conservation
- Environmental and Biogeochemistry
- Geospatial Data Science
- Plant and Crop Science
- Political Ecology
- Soil, Plant and Land Systems
- Water Science

Doctoral training centres

North West Doctoral Training Centre

Every year around 60 postgraduates begin studentships at the North West Doctoral Training Centre – the largest such centre to be funded by the Economic and Social Research Council in England. Drawing on the capabilities of the universities of Lancaster, Liverpool and Manchester, the centre supports postgraduate research across the full range of social science disciplines such as human geography, development and the environment.

Envision

Led from Lancaster, but with university and business links across Britain, Envision is a government-funded £4.9 million initiative designed to create the next generation of environmental scientists. As a successful candidate, you will receive the doctoral training and real-world employment experience you need to launch you on a successful career in the environmental sector.

Centre for Global Eco-Innovation

Led by Lancaster Environment Centre, the Centre for Global Eco-Innovation is designed to support collaboration between universities and businesses, delivering high-quality, business-led research to create eco-innovative technologies, products and services. This work is underpinned by a team of postgraduate researchers, who are given the chance to study for an industry-focused PhD and launch their own careers in research and development.

Waitrose Collaborative Training Partnership

Led by Waitrose and Lancaster University in collaboration with the University of Reading, University of Warwick and Rothamsted Research, the Waitrose CTP has been designed to foster collaboration between Waitrose and academia. The themes cover, soil and water, sustainable crop production and biodiversity and ecosystem services. You have the opportunity to develop your professional skills through a high quality training programme delivered by the CTP and you will engage with industry to optimise the impact of your project on wider food security and sustainability issues.
Professional training

Our professional training programmes are organised on a flexible module-by-module basis, which makes it easier for you to fit your studies around your work. Some are taught online, with additional face-to-face workshops. Others are taught in residential blocks of two-to-three days duration.

Each module is worth a certain number of credits, which can count towards a postgraduate qualification. You may wish to start by studying to Postgraduate Certificate level, which requires a total of 60 credits. You can then progress to a Postgraduate Diploma, which requires 120 credits, and if you complete an additional supervised research project you can be awarded Masters degree. Alternatively, it may also be possible to take a single module for the purpose of continued professional development.

Further information can be found at: [www.lancaster.ac.uk/gse/professional-training](http://www.lancaster.ac.uk/gse/professional-training)

Easy to find

The Graduate School for the Environment is located at five centres across the UK. The following directions are for Lancaster:

**By road**
From the north or south, leave the M6 motorway at junction 33 and take the A6 north towards Lancaster for about three kilometres. The University is on the right.

For Sat Nav use: LA1 4YW

**By rail**
There are direct rail links between Lancaster and London (Euston), Birmingham, Leeds, Manchester, Glasgow and Edinburgh. The single journey between London and Lancaster takes between two-and-a-half to three hours.

Buses and taxis are available from just outside Lancaster station.

**By coach and bus**
Lancaster city is on the national coach network; National Express coaches call at the University. Local buses (services 2, 2A, 3, 3A, 4, 41 and 42) from Lancaster bus station run to the University every five minutes on week days.

Further information can be found at:

CEH Edinburgh
CEH Bangor
CEH Wallingford
CEH North Wyke

Food Challenges for the 21st Century
This is a unique professional training programme devised with the support of Waitrose, which focuses on the issue of global food security.

Natural Flood Risk Management
This NERC-funded advanced training short course provides the latest modelling techniques used to implement nature-based flood risk management and assess the benefits.

Flood and Coastal Risk Management
This specialist programme is aimed at professionals who want to gain and apply technical skills and knowledge in the water, environment and flood risk management sector.

Food Challenges for the 21st Century

Food Challenges for the 21st Century

Food Challenges for the 21st Century