PRIFYSGOL ABERYSTWYTH UNIVERSITY

Department of Geography and Earth Sciences

Postgraduate studies in

Geography and Earth Sciences

Contents

Important information

The programme information published in this brochure was correct at time of going to print (October 2021) and may be subject to change. Prospective students are advised to check the definitive programme information, including entry requirements, that is available on our website before making an application, to ensure that the programme meets their needs.

Welcome to the Department of Geography and Earth Sciences

The Department of Geography and Earth Sciences at Aberystwyth University is one of the largest and most experienced of its kind in the UK, specialising in a broad range of themes across the natural, physical and social sciences. We benefit from a wealth of natural resources right on our doorstep, including mountains, forestry, rivers, sea, and rural and urban environments. We have recently celebrated a century of Geography at Aberystwyth, and have been teaching Earth Sciences for even longer!

Our staff are passionate about what they do. They are dedicated researchers and lecturers, many of whom are at the forefront of their respective fields. Their first-hand knowledge of the world is fed into our postgraduate courses through a variety of specialist themes.

The Department is in the top ten of UK Geography departments with regards to research power, which provides a measure of the quality of research, as well as of the number of staff undertaking research within the department. We receive funding from organisations such as RCUK (NERC, ESRC), Royal Society, Leverhulme, United Nations, WHO and the European Research Council to support our research activities

Our courses are designed to train you in research skills and methodologies, as well as provide you with hands-on fieldwork and vocational training. As well as highly satisfied students, we have always had a strong track record of producing highly employable graduates. Many have found employment with national and international government bodies, private enterprises and leading research establishments.

Further information about our postgraduate courses and other opportunities can be found in this booklet. If you need further assistance, please do not hesitate to contact us.

Professor Andrew Mitchell and Dr Gareth Hoskins

Directors of Postgraduate Studies, Department of Geography and Earth Sciences

Professor Andrew Mitchell

Dr Gareth Hoskins

Our courses

Taught degrees

Research degrees

Environmental Change, Impact and Adaptation

MSc

This degree will develop your knowledge of the challenges posed to society by climatic and environmental change. It is an interdisciplinary programme that draws on world-leading expertise in both the natural and social sciences.

You will develop a broad suite of skills necessary to investigate topics related to climate and environmental change and to evaluate risks to society. You will study a diverse range of themes including desertification, agricultural sustainability, policy-making for environmental change, terrestrial carbon cycling, data analysis, science communication, flood risks and Quaternary environmental change.

Specialist opportunities for Environmental Change, Impact and Adaptation students at Aberystwyth include:

- studying the latest understanding of environmental change and our efforts to plan for and manage future change, in a department that receives funding from organisations such as United Nations, WHO and the European Research Council
- undertaking advanced training in environment-based topics from one of the UK's leading research departments
- benefitting from Aberystwyth's high quality outdoor physical environment with its multi-national community.

Employability

Graduates of this degree will be highly competent contributors to any work relating to human impacts on and management of terrestrial ecosystems, environmental risk assessment and policy analysis, and disaster relief. Our graduates have gone on to follow a wide variety of career pathways as field technicians, geologists, environmental consultants, policy advocates in the energy sector, and in planning roles across various market sectors. They have found employment with organisations such as the Met Office, the European Space Agency, the Civil Service, national parks, local and national government, education, and researching alongside prominent institutions and initiatives.

Modules

Core modules that you may study on this course include:

- Advanced Research Skills: Science, Communication and Data Analysis
- Environmental Change: A Palaeo Perspective
- Global Climate Change: Debates and Impacts
- Investigating Environmental Change: Fieldwork
- Managing Environmental Change in Practice
- Risk Management and Resilience in a Changing Environment.

Environmental Change: A Palaeo Perspective

Studies the importance of understanding natural environmental change in order to place present and future environmental change into context. Considers the Anthropocene, Quaternary, and Holocene periods, as well as using examples of the last and late glacial periods.

Global Climate Change: Debates and Impacts

Introduces you to the IPCC report on climate change highlighting the different ways in which the findings of the IPCC synthesis report have been portrayed in the media by a variety of groups, including sceptical organisations.

Risk Management and Resilience in a Changing Environment

Explores the emergence of both resilience and behavioural insights as tools of policy and considers their potential and limitations for managing socio-environmental change.

For more details and the latest information on our modules, see our website.

Key Facts

Degree type: MSc.

Course Code: F998.

Duration: 1 year (full-time) or 2 years (part-time).

Practising Human Geography

MA

This degree will provide rigorous research training in theoretical and practical approaches to human geography. Designed as a specific gateway into social science research, the degree will examine how geography has dealt with key themes including space, place, time, scale, mobility and power, as well as providing detailed training on the methods and ethical frameworks underpinning human geography research.

You will develop an awareness of policy debates in human geography, the ethical, moral and legal perspectives on the subject, and the practical, philosophical, epistemological and theoretical approaches to human geography. You will also develop research skills by undertaking research training modules, all of which you will then apply to your own practical research project.

Specialist opportunities for Practising Human Geography students at Aberystwyth include:

- studying a course approved by the ESRC for eligibility to Research Council PhD funding
- participation in the two-day residential "Theory School" with leading scholars
- access to a range of high-quality research-led teaching on cutting-edge topics.

Employability

On graduation you will be well-placed for a career that contributes to policy and governance, territory, landscape, sustainability, research design and data handling. Our graduates have taken a wide variety of career pathways including social research consultancy, policy development, advocacy work, natural and cultural resource management, public sector regulation, planning, NGO development, heritage sector work, and academic careers through to doctoral research.

Modules

Core modules that you may study on this course include:

- Human Geography: Theory and Method
- Key Concepts and Debates in Human Geography
- Principles of Research Design
- Qualitative Data Collection and Analysis
- Quantitative Data Collection and Analysis.

Key Concepts and Debates in Human Geography

Provides a brief history of geography; space, place and time; nature and society; humanistic geography; materialising human geography, or post-humanistic geography. You will also study mobilising human geography; affect and emotion; performance and place; collaborative geographies; and ethical and moral geographies.

Human Geography: Theory and Method

Provides methodological training in the understanding and application of appropriate research theories and methodologies within the field of human geography.

Principles of Research Design

Introduces you to the basic principles of research design and strategy, enabling you to demonstrate your capacity to formulate and analyse research questions, formulate testable hypotheses, and assess the implications of the outcomes of your research.

For more details and the latest information on our modules, see our website.

Key Facts

Degree type: MA.

Course Code: L791.

Duration: 1 year (full-time) or 2 years (part-time).

Remote Sensing and GIS

MSc

This Masters course is designed to equip you with cutting-edge skills for the processing and analysis of geographical data.

A key part of this course is to teach you core programming skills (e.g. Python, R and Google Earth Engine) enabling you to carry out ambitious and state-of-the-art processes. Our focus is on the use of freely available software, including software that we write and maintain ourselves (used by NASA and the Japanese Space Agency amongst others) to process a wide range of data sources including optical and radar satellite imagery, drone imagery and LiDAR data. Building on our world-leading research, you will learn these skills by applying them to areas such as disease risk, forest biomass and carbon mapping, land cover change and a range of other environmental challenges.

Specialist opportunities for Remote Sensing and GIS students at Aberystwyth include:

- learning cutting-edge remote sensing and GIS techniques and concepts by applying them to real-world case studies
- the opportunity to contribute to current projects within the world-leading Earth Observation and Ecosystem Dynamics research group, including quantifying global forest carbon stocks, mapping the world's mangroves, and providing spatial intelligence for the battle against malaria
- access to a dedicated computer laboratory for research in GIS and remote sensing which is fully equipped with the latest software platforms
- putting your skills into practice by collaborating directly with company and academic partners on real-world problems.

Employability

Graduates of this course have found great success in securing positions at world-leading academic and industrial institutes. Our alumni have taken positions with UK and international government bodies, private enterprises and leading research establishments. By studying this course, you will become a highly competent contributor to any work relating to climate change, human impacts on terrestrial ecosystems, glaciology, hydrology, forestry, coastal change, carbon cycle science, biodiversity, and environmental consultancy.

Modules

Core modules that you may study on this course include:

- Fundamentals of Remote Sensing and GIS
- Advanced Research Skills: Science, Communication and Data Analysis
- Advanced Skills in Geographical Information Systems
- Advanced Skills in Remote Sensing
- Applied Geospatial Skills in Industry
- Remote Sensing Issues.

Advanced Skills in Geographical Information Systems

Will provide you with an opportunity to engage with advanced processing chains and data analysis for a range of applications.

Advanced Skills in Remote Sensing

Will provide you with an advanced understanding of remote sensing systems and media, including processing, analysing and disseminating data.

Applied Geospatial Skills in Industry

In groups, you will produce a project plan for an external organisation, deliver it, and provide an end of project report and presentation.

Remote Sensing Issues

Highlights current topics in remote sensing and specifically in space science, biology, geography and computer science.

For more details and the latest information on our modules, see our website.

Key Facts

Degree type: MSc.

Course Code: F994.

Duration: 1 year (full-time) or 2 years (part-time).

Research degrees

MPhil, PhD, DProf

We offer MPhil, PhD and DProf degrees in a wide range of topics related to our research expertise.

We have a large postgraduate community researching some of the world's global challenges. This includes our research expertise and focus on:

- Glacial processes and products
- Quaternary environmental change
- Earth surface processes
- Soil carbon cycling and climate change
- Earth observation and ecosystem dynamics
- Geochemistry and biogeochemistry
- Cultural and historical geography
- New political geographies.

Our lecturers are active researchers working at the cutting-edge of their disciplines, and you will benefit from being taught the latest geographical, environmental and earth science theories and techniques. You will utilise our leading facilities in both physical geography, earth and environmental science and human geography, including state-of-the-art labs and instrumentation, field equipment and software.

Full-time MPhil degrees typically take 1 year, and PhDs take 3 years. Part-time study is also available. Scholarship funding is available from Aberystwyth University as well as external funding sources. The main focus of your research degree will be the production of a thesis and research publications. You will receive supervision from specialists within the Department on the planning, creation and writing of your thesis.

The Professional Doctorate or DProf is more appropriate for those pursuing professional rather than academic careers and is designed to allow qualified professionals to study towards a doctorate while maintaining their employment. A DProf will be awarded in recognition of the successful completion of an approved taught programme of study, together with the successful completion of an advanced piece of research. The collaborative aspect provided by a work-based research project provides an ideal opportunity to embed new knowledge in the workplace and ensure that your research is relevant to industry.

For further information regarding potential topics and supervisors see our website, or contact us.

Our research

The Department's main research centres and groups cover a wide range of research areas, and the Department is also part of several interdisciplinary research clusters.

Centre for Glaciology

Research at the Centre for Glaciology ranges from numerical modelling, through process glaciology and glacier hydrology to glacial geology, geomorphology and biogeochemistry. We focus on responses of glaciers to mass balance and climatic change; interactions between glaciers and the marine environment; principles of mass, energy and chemical exchange between atmosphere, cryosphere and hydrosphere; biogeochemical cycles; spatially distributed variations in ice types; characteristics of subglacial sediments; relationships between proglacial geomorphology and glacial processes; processes of transport and character of glacier debris and former glacier behaviour from glacial geomorphology.

Cultural and Historical Geography Research Group

Aberystwyth is one of the world's leading centres for research in cultural and historical geography, which researches a range of themes, geographical areas, and time-periods, with a particular focus on the 20th century. This includes projects on issues of mobility, memory, heritage, nationalism, materiality, children's geographies, gender, and identity, as well as conceptually innovative research on changing understandings of space, place, landscape and environment.

Earth Observation and Ecosystem Dynamics Research Group

The primary focus of the Earth Observation and Ecosystems Dynamics Group is the use and integration of ground, airborne and spaceborne remote sensing data for a better understanding of the impacts of anthropogenically-induced climate change on ecosystems and environments. Our research includes: vegetation carbon dynamics in wooded savannas; characterising mangroves in response to environmental change; habitat classification; remote sensing of natural hazards; and mapping malaria vector aquatic habitat. We have expertise in a diverse range of remotely sensed data including airborne/spaceborne radar, multispectral, hyperspectral optical and thermal infrared as well as Light Detection and Ranging (LiDAR) sensors.

New Political Geographies Research Group

This internationally-recognised group is concerned with the theoretical and empirical explanation of emerging new political geographies, revolving around geographies of governance, democracy and citizenship; the politics of locality, region and territory; environmental politics and governmentality; political geographies of economic and social regulation; the politics of global mobility and migration; and social movements and the politics of alternatives.

Quaternary Environmental Change Research Group

The group seeks to characterise and interpret the complex record of environmental change over the last two million years. Research strengths include Quaternary geochronology (especially luminescence dating); climatic and anthropogenic change through pollen, diatom and geochemical analysis of lake sediments; geomorphological study of environmental change and human impacts especially in the Mediterranean basin; assessing rates of coastal processes; tephrochronology; volcanic hazards in prehistory; volcanoes and air pollution problems in historic times; environmental archaeology and human origins.

Earth Surface Processes Research Group

Research in the Earth Surface Processes Group aims to advance understanding of the processes, patterns, timing, rates and drivers of landsurface dynamics. Our research spans disparate environments and a wide range of time and space scales, with investigations ranging from the effects of climate change on river behaviour over many millennia to the influence of microbial processes on soil carbon cycling during individual rainfall-runoff events. The group has particular strengths in i) landsurface processes, particularly associated with rivers, soils and carbon cycling ii) landsurface responses to environmental change, and iii) river and coastal water quality.

Interdisciplinary Centre for Environmental Microbiology and Geochemistry (iCEM)

iCEM's goal is to investigate the occurrence and activity of microorganisms and associated biogeochemical processes and their interactions with earth materials (waters, rocks and soils) in extreme environments (cold, hot, high pressure, high metal concentration). We utilise this understanding for geoengineering solutions to environmental, energy, health and resource issues with key stakeholders. Research themes include applied biomineralisation for carbon storage, glacier geomicrobiology and biogeochemistry, antibiotic discovery, and the bioremediation of metals and radionuclides.

Current projects include:

Global Mangrove watch

Mangroves are key ecosystems for coastal protection, so knowing their extent and changes due to environmental change is critical. The Global Mangrove watch project in the Earth Observation and Ecosystem Dynamics Research Group is undertaking this critical work.

Malaria risk in Africa

In 2019, an estimated 409,000 people died of malaria, which is driven by the prevalence of stagnant water. Most fatalities occurred in sub-Saharan Africa. Working with fluvial geomorphologists as well as public health bodies, this major project has been using remote sensing to identify critical habitats for malaria development to reduce their prevalence and to map their changes over time.

Wetlands monitoring in Africa

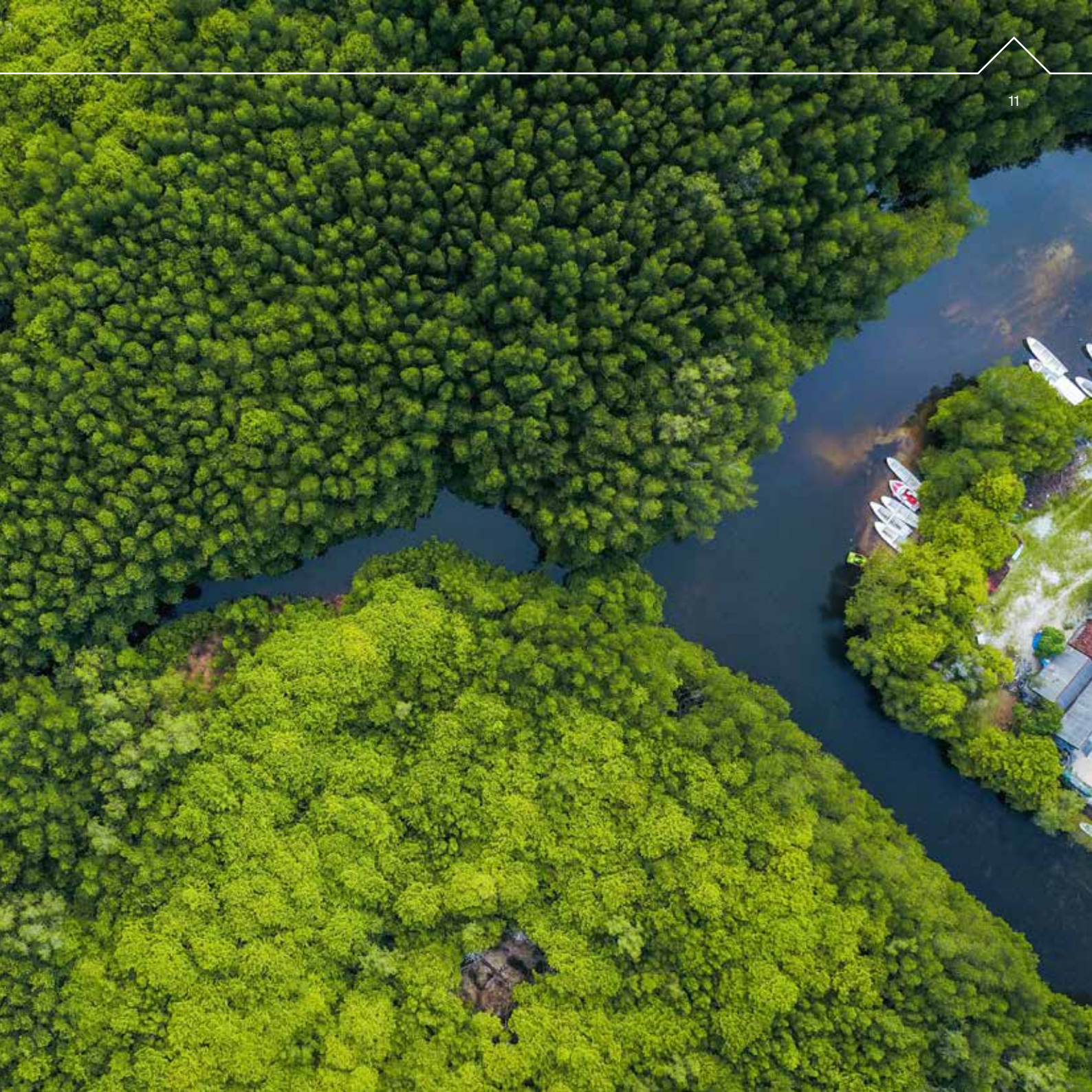
Wetlands are critical carbon stores, and changes in their extent is cortical for long term carbon fluxes. This project has been using remote sensing techniques to monitor these long term changes in carbon stores.

Bio-crusts in drylands

Microbial processes in dryland can affect the release and storage of carbon. This project is investigating the carbon dynamics in these systems in relation to seasonal weather patterns and spatial variability, which is critical for understanding carbon fluxes in these environments.

The Elan Valley Storymap

This project focuses on geoheritage and science communication in relation to this much loved upland environment in Mid Wales, which is important for tourism and as a critical water resource for the midlands of England



Employability

We want all our students to achieve their ambitions. That's why we make every effort to help you gain the skills you need to succeed in the workplace during your time at university. Individual enterprise, group discussion and leadership skills are encouraged through a range of opportunities provided in lecture, seminar, tutorial, library, field and practical settings. You will put your skills into practice during your course by collaborating directly with company and academic partners on real-world problems.

All our Masters schemes have strong links to industry or public bodies which directly enhances your employability via exposure to real-world issues and important contacts in these fields. For students on our MA Practising Geography programme, participation in the two-day residential "Theory School" with leading scholars will also provide excellent career networking opportunities.

Working with industry partners

Some of our postgraduate modules involve working with industrial partners. For example, the Applied Geospatial Skills in Industry module involves groups of students tackling problem briefs set up industrial partners who will act as the customer throughout the project. The groups produce a project plan, deliver the proposed project and provide an end of project report and presentation. Recent examples include NASA: Mangrove conservation; Telespazio Vega: Suburban biomass mapping; Welsh Government: Forest inventories and soil sealing; South Atlantic Environmental Research Institute: Wetland mapping; and Coleit: Forest change in Ireland.

The Managing Environmental Change in Practice module is based on workshops delivered by the external speakers from industry and public bodies highlighting real world examples in order to demontrate the methods and mechanisms by which environmental change is investigated and managed. Recent examples include energy production strategies for the UK, flood planning and insurance, and managing land to reduce CO2 emission.

Recent graduates have gone into a range of careers, including regional and local environmental consultancy, planning and development, travel and tourism, local government and government agencies, education and outreach, journalism, and careers in the Civil Service.

Your postgraduate course will enhance your:

- Presentation and communication skills
- Research and study skills
- Field expertise and data collection skills
- Critical analysis and evaluation
- Academic and practical knowledge
- Understanding of scientific processes and advanced technical tools
- Project management skills.

For PhD students there are a range of focused career development workshops on offer to help you network and raise your profile in the world of research. Aberystwyth University has also subscribed to the Vitae Researcher Development Planner to assist you with your professional development planning (PDP) process and prepare you for you next step after your degree, whether it be further academic study or employment.

Careers Service

Your time at university is a great chance to learn, develop and explore a whole range of experiences and options. As a Careers Service, we help you recognise who you are, what you are good at, and where you might like to go, and empower you to see what a world of opportunity awaits you now and for your future.

The University's Careers Service has experienced and professionally qualified staff to help you:

- identify and source useful work experience options
- recognise the skills your university degree gives you that are valuable to employers
- plan your possible future career path(s)
- support you as you make applications to employers
- understand how to set up your own business
- link up with employers, alumni and professional bodies to progress your career plans.

"Interview panel impressed by the course content…not many graduates have specific experience working with industry…really stood out from other candidates."

2019 graduate recruited by the James Hutton Institute

Extra curricular activities

Seminars

You will have the opportunity to network and increase your professional exposure through the department's regular academic and guest speaker seminars. This includes seminars from leading national and international academic, as well as industry representatives from organisations such as Natural Resources Wales and Dwr Cymru (Welsh Water), for example.

Theory School

The two-day residential Theory School (held in conjunction with Cardiff and Swansea Universities) is hosted by the Human Geography Pathway of the Economic and Social Research Council's Wales Doctoral Training Partnership. This immersive conference-style learning environment is an annual event which normally takes place in the spring, and is usually held at Gregynog Hall, a beautiful country mansion near Newtown, Mid Wales. The Theory School welcomes those pursuing taught and research postgraduate degrees in Human Geography and cognate disciplines and presents an opportunity to read and discuss key areas of contemporary geographical thought. The event is led by staff and students from Aberystwyth, Cardiff and Swansea Universities.

The similar one-day Methods Workshop is hosted alternately by Aberystwyth, Cardiff and Swansea Universities.

GeogSoc

The lively GeogSoc runs a variety of trips and social events throughout the year, from dolphin-watching and toboganning to mini breaks to the continent. They regularly host a stand at British Science Week to engage the public in volcanoes, glaciers and such like.

Gregynog Hall, Tregynon, Powys

Geography & Earth Sciences
Aberystwyth University
Llandinam Building
Penglais Campus
Aberystwyth
SY23 3DB

+44 (0) 1970 622 606

dgostaff@aber.ac.uk

/AUIGES

@AU_DGES

Designed and produced by Global Marketing and Student Recruitment, Aberystwyth University 2021.