

Geography and Environmental Science Modules for Visiting Students 2026/27



The range of modules available in this department, ranked in the Top 10 in the UK for Geography in the *Guardian University Guide 2026*, spans all areas of the subject, from human geography to physical science.

Geography: Level 4 modules provides a foundation in human and physical geography. A wide range of key transferable skills will be developed, including geographical information systems (GIS). Students gain an understanding of the Earth, its environments, and the global concerns of humanity.

At level 5, research, evaluative and practical skills are developed through field trips at home and overseas. More specialized modules are offered in human and physical geography.

Level 6 modules are more specialized & cover key issues such as the impact of climate change & urban geographies.

Environmental Science: Level 4 modules introduce key concepts in environmental science, including methods of scientific investigation. Students study the processes that operate within environmental systems and cause change and gain an understanding of the ways people interact with the environment and examine sustainability challenges for the future.

Level 5 builds knowledge of environmental systems and analytical science. Skills are developed through the analysis of environmental data, and students develop a practical understanding of techniques for investigating our environment.

Level 6 modules are advanced and continue on from level 5 study, enabling students to apply their knowledge to investigate contemporary environmental challenges.

Updated August 2026/PJW

Entry requirements: GPA of 2.75 or above (out of 4.0) or equivalent.

Pre-requisites:

- **Level 4:** prior introductory university-level study of geography or environmental studies is very useful.
- **Level 5:** prior study of geography/environmental science is required (at level 4 or equivalent).
- **Level 6:** substantial prior study of geography/environmental science is required.
- **For levels 5 and 6,** any specific pre-requisites for individual modules will be detailed in each module description.

Taught at: Penrhyn Road campus

Geography and Environmental Science Modules for Visiting Students 2026/27

Notes:

1. All modules are at **undergraduate** level only.
2. Students enrolled on Study Option 1 are required to study the entire module over both semesters.
3. Whilst the University makes every effort to ensure that this information is correct at the time of updating (August 2026), it cannot accept responsibility for omissions or subsequent changes. Module availability and content may be subject to change, as part of the University's policy of continuous improvement and development.
4. Details of assessment for students enrolled on either Study Option 2 or 3 where provided are **indicative only** and may also be subject to change as part of the above policy.

KEY TO MODULE DESCRIPTORS	
SUITABILITY OF MODULE FOR STUDENTS VISITING KU ON STUDY OPTION ____	
1:	Indicates module is suitable for students on Study Option 1 (Whole Year)
2:	Indicates module is suitable for students on Study Option 2 (Autumn)
3:	Indicates module is suitable for students on Study Option 3 (Spring)

MODULE CODE	LEVEL	MODULE TITLE	SUITABILITY KEY
GG4006	4	Digital Mapping	1, 2
GG4007	4	Introduction to Environmental Science and Sustainability	1, 2, 3
GG4009	4	Our Dynamic Earth	1, 2, 3
GG4012	4	Global Challenges in Human Geography and Sustainability	1, 2, 3
GG4102	4	GIS, spatial data and programming	1, 2, 3
GG4103	4	Sustainability, Environmental Technology and Nature-based solutions	1, 2, 3
GG5002	5	Geographical Theory and Practice	1, 2

Study Option 1 = Whole Year
Study Option 2 = Autumn
Study Option 3 = Spring

Geography and Environmental Science Modules for Visiting Students 2026/27

GG5003	5	Advanced Research Methods and Project Management	1, 2
GG5021	5	Rivers, Oceans and the Atmosphere	1, 2, 3
GG5022	5	Understanding Our World with GIS	1, 2
GG5023	5	Principles of Ecology and Conservation	1, 2
GG5024	5	Contaminated Land, Assessment and Remediation	1, 3
GG5025	5	Capitalist Societies	1, 2
GG5026	5	Advanced Research Methods and Statistics	1
GG5027	5	Cultural Geographies	1, 3
GG5028	5	Geomorphology, Geotechnics and Geohazards	1, 3
GG5045	5	Disasters, Society and Culture	1, 2
GG6020	6	Development Geographies	1, 2
GG6021	6	Land and Water Resources Management	1, 2, 3
GG6022	6	The Science of Climate Change	1, 2
GG6023	6	Conservation Theory and Practice	1, 3
GG6024	6	Climate Change Hazards, Resilience and Solutions	1, 3
GG6070	6	The Challenge of Climate Change	1, 2
GG6440	6	Geophysical Hazards: Processes and Disaster Risk Reduction	1, 2
GG6460	6	Solving Real World Data with GIS	1, 3
GG6470	6	Communities and Social Justice	1, 2
GG6480	6	Water Resources Management	1, 2

LEVEL 4 – INTRODUCTORY

Module Code: GG4006
Module Title: Digital Mapping
Level: 4
Prerequisites: prior study of geography is useful

Study Option 1 = Whole Year
Study Option 2 = Autumn
Study Option 3 = Spring

3

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Credit:

- Full Year: 8 (US) 15 ECTS
- Single Semester: 4 (US) 7.5 (ECTS)

Suitability:

- Study Options 1 or 2
- Not open to Erasmus students as level 4 (unless home institution agrees)

Content:

Maps are tools for visualising spatial information to communicate pattern, processes, and the results of geographical analysis. This module explores the principles and practice of map design and production using Geographical Information System (GIS) software. Basic GIS principles are introduced, including data modelling, data quality, and simple analytical operations. The cartographic design process will be examined through the lens of the 'map communication model' (MCM) and graphic and cartographic design principles. The MCM will be critically evaluated in the modern context of interactive web maps, open source enabled self-production, crowdsourcing, personalisation, 'big data', and emerging AI technologies. Ethical and legal issues relating to data collection, linkage, copyright and attribution are explained.

Digital literacy employability skills will be developed, and the module will provide a baseline for developing more advanced GIS and mapping skills at higher levels.

➤ **Topics:**

- What are geographical information systems?
- How spatial and attribute data is represented and modelled in a GIS?
- Data model design for real-world problems.
- Critical evaluation of primary and secondary data, including crowd-sourced data.
- Cartographic and graphic design as a process.
- Cartographic and graphic design decisions and principles.
- Critical cartography and GIS – how data, maps and spatial technologies influence how we 'see' and act in the world as individuals, businesses and a society.

Teaching: weekly one-hour lecture and two-hour practical sessions

Assessment:

➤ **Study Option 1:**

- Web mapping application (graphical output, 3000 words equivalent) (50%)
- Static map design and design summary (graphical output, 3000 words equivalent) (50%)

➤ **Study Option 2:**

- Part of study option 1 assessment

Study Option 1 = Whole Year 4
Study Option 2 = Autumn
Study Option 3 = Spring

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Last updated: 28/08/26 PJW

[Return to TOP](#)

Module Code: GG4007

Module Title: Introduction to Environmental Science and Sustainability

Level: 4

Prerequisites: prior study of geography is useful

Credit:

- Full Year: 8 (US) 15 ECTS
- Single Semester: 4 (US) 7.5 (ECTS)

Suitability:

- Study Options 1 or 2 or 3
- Not open to Erasmus students as level 4 (unless home institution agrees)

Content:

This module introduces the basic principles of environmental science, including environmental chemistry, water quality analysis/assessment, environmental pollution, and ecology. The module further explains the core concepts and approaches of sustainability, including sustainable development and SDGs, environmental justice and perception. The module will investigate basic environmental principles to help students to understand how physical and human processes and activities can promote change in environmental systems and sustainability at a range of spatial and temporal scales.

Students will investigate the impacts of environmental change, sustainable development, understand their significance, and show how this knowledge can be applied to the management of environmental and sustainability challenges. The importance of a holistic approach to problem solving in the environmental sciences will be introduced along with material on key underpinning scientific disciplines including environmental chemistry and ecology through the investigation of global habitats.

➤ **Topics:**

- Environmental themes: unifying themes and models for understanding the earth and its environment, including evolutionary processes, ecosystems, environmental cycles and environmental services.
- Environmental pollution and pollution pathways: sources and types of point and diffuse water pollution; impact of pollutants on receiving watercourses; chemical and biological assessment

Study Option 1 = Whole Year
Study Option 2 = Autumn
Study Option 3 = Spring

5

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methods for river pollution.

- The biosphere: ecosystem structure and the transfer of energy and matter, factors limiting distributions, change in ecological systems. Biodiversity loss and invasive species, successional change and macroecology, enhancing ecosystem resilience.
- Sustainability and the environment: sustainable development and the UN SDGs; sustainable development and the UN SDGs, and Sustainability at Kingston University and the London Doughnut Economics Group.
- Foundations of environmental chemistry: the periodic table, reactions and your significance in the environment; basic organic chemistry; radioactivity
- Earth environments, e.g., polar, temperate, tropical, arid, marine and urban.

Teaching: weekly two-hour lecture and several three-hour practical sessions

Assessment:

➤ Study Option 1:

- Sustainability brief -3000 words equivalent (50%)
- Water quality report - 3000 words equivalent (50%)

➤ Study Options 2/3:

- Part of study option 1 assessment

Note: methods of assessment listed are indicative only and may be subject to change

Last updated: 28/08/26 PJW

[Return to TOP](#)

Module Code: GG4009

Module Title: Our Dynamic Earth

Level: 4

Prerequisites: prior study of geography is useful

Credit:

- Full Year: 8 (US) 15 ECTS
- Single Semester: 4 (US) 7.5 (ECTS)

Suitability:

- Study Options 1 or 2
- Not open to Erasmus students as level 4 (unless home institution agrees)

Study Option 1 = Whole Year
Study Option 2 = Autumn
Study Option 3 = Spring

6

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Content:

Core lectures introduce key fundamental topics in physical geography, overviewing the various spheres of the Earth, associated processes and interaction. Themes are presented systematically as a cross-section of the Earth's physical structure: geological underpinning, Earth surface processes (introducing geomorphology, the pedosphere and hydrosphere), the atmosphere, and the biosphere. Interwoven within these topics are lectures on associated environmental hazards, including geophysical hazards (e.g., volcanic eruptions, earthquakes and tsunamis), atmospheric hazards (including hurricanes and tornadoes) and environmental and ecological hazards (including drought, and wildfires). Processes behind these major natural and man-made environmental hazards will be described, with reasons provided for their occurrence and global spatial distribution. Detailed case studies from a variety of geographical regions will help to build a portfolio of examples, enhancing apprentice knowledge of the processes, impacts and means of forecasting and mitigating against hazards becoming disasters.

The module introduces apprentices to the application of environmental and geophysical knowledge and skills to real world challenges and potential discipline-related employment opportunities. A range of transferable employability skills are developed throughout the module, e.g., teamwork and presenting skills, in the learning activities and related assessments.

➤ **Topics:**

- Earth's physical structure and geological underpinning
- Earth surface processes and geomorphological principles
- Systematic physical geography of the earth: the pedosphere, the hydrosphere, the atmosphere and the biosphere.
- Practical skills develop theoretical topics and illustrate the principles of monitoring and managing select environmental systems, make accurate observations and analysis of data.

Teaching: weekly one-hour lecture and one/two-hour workshops/practical sessions

Assessment:

➤ **Study Option 1:**

- Team-based geophysical hazards poster presentation, 15 minutes (50%)
- Portfolio of in-class MCQ tests (2 hours in total) (50%)

➤ **Study Option 2:**

- Part of study option 1 assessment

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Last updated: 28/08/26 PJW

[Return to TOP](#)

Module Code: GG4012
Module Title: Global Challenges in Human Geography and Sustainability
Level: 4
Prerequisites: prior study of geography is useful
Credit: • Full Year: 8 (US) 15 ECTS • Single Semester: 4 (US) 7.5 (ECTS)
Suitability: • Study Options 1 or 2 or 3 • Not open to Erasmus students as level 4 (unless home institution agrees)
Content: This module is designed to introduce key geographical theories and concepts whilst providing a foundation for future studies in Human Geography. The module provides a broad understanding of the relationships between human societies and a range of economic, cultural, social and political processes at a variety of scales. The examines case studies from different geographical contexts in both the global north and south. The first part of the module will focus on global issues. Topics covered include demographic change, economic development, energy security, resource extraction, environmentalism and green politics, global governance and geopolitics. Here students will examine how these issues unfold unevenly across different geographical contexts. The second part of the module will focus on place-based studies. Here students will examine how and why socio-cultural as well as political and economic configurations manifest as they do in different geographical locations. The final part of the module explores issues of sustainability within the context of professional development and employability. ➤ Topics: • Global issues: Demographic change, economic development, energy resources, resource extraction, environmentalism and green politics, geopolitics and global governance. • Studies of place: Social and cultural change, ethnic diversity, inequality, material landscapes, institutions • Foundations of sustainability: concepts of sustainable development and the UN SDGs, environmental justice and perceptions, practical examples of sustainability at Kingston University and from the London Doughnut Economics Group, practical skills on embedding AI/technology into sustainability

Study Option 1 = Whole Year
Study Option 2 = Autumn
Study Option 3 = Spring

8

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practice

Teaching: weekly three-hour lecture and several three-hour practical sessions

Assessment:

➤ Study Option 1:

- Essay -3000 words (50%)
- Sustainability brief (3000 words) (50%)

➤ Study Options 2/3:

- Part of study option 1 assessment

Note: methods of assessment listed are indicative only and may be subject to change

Last updated: 28/08/26 PJW

[Return to TOP](#)

Module Code: GG4102

Module Title: GIS, Spatial Data and Programming

Level: 4

Prerequisites: prior study of geography is useful

Credit:

- Full Year: 8 (US) 15 ECTS
- Single Semester: 4 (US) 7.5 (ECTS)

Suitability:

- Study Options 1 or 2 or 3
- Not open to Erasmus students as level 4 (unless home institution agrees)

Content:

This module equips students with essential spatial data literacy, focusing on the use of Geographical Information Systems (GIS), cartography, and emerging technologies in climate resilience. They will explore the principles of map design and production using GIS software, learning about data modelling, quality, and basic spatial analysis. The cartographic design process is examined through the 'map communication model' (MCM), alongside graphic and cartographic principles. The MCM is critically assessed in the context of modern mapping trends, including interactive web maps, open-source tools, crowdsourcing, personalisation, big data, and AI.

Study Option 1 = Whole Year

9

Study Option 2 = Autumn

Study Option 3 = Spring

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The module introduces foundational programming skills to support data processing and quality assessment. Students will gain hands-on experience in reading, analysing, and visualising climate resilience data in a coding environment. An overview of machine learning (ML) and artificial intelligence (AI) is provided, highlighting distinctions from traditional methods and the growing role in spatial analysis. Key ML/AI concepts such as black/grey-box models and theory separation are introduced.

Ethical and legal considerations, including data privacy, copyright, and attribution, are also addressed. The module supports the development of digital literacy and employability skills, laying the groundwork for more advanced GIS and data analysis modules at higher levels.

➤ **Topics:**

- What are geographical information systems?
- How spatial and attribute data is represented and modelled in a GIS?
- Data model design for a real-world problem.
- Critical evaluation of primary and secondary data.
- Cartographic and graphic design as a process.
- Cartographic and graphic design decisions and principles.
- Programming essentials.
- Data visualization.
- What is AI? – expert systems, machine learning, and deep learning.

Teaching: weekly lectures, seminars and workshops

Assessment:

➤ **Study Option 1:**

- Static map design and design summary (3000 words equivalent) (50%)
- Program implementation (3000 words equivalent) (50%)

➤ **Study Options 2/3:**

- Part of study option 1 assessment

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Last updated: 28/08/26 PJW

[Return to TOP](#)

Module Code: GG4103

Study Option 1 = Whole Year
Study Option 2 = Autumn
Study Option 3 = Spring

10

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Module Title: Sustainability, Environmental Technology and Nature-based solutions

Level: 4

Prerequisites: prior study of geography is useful

Credit:

- Full Year: 8 (US) 15 ECTS
- Single Semester: 4 (US) 7.5 (ECTS)

Suitability:

- Study Options 1 or 2 or 3
- Not open to Erasmus students as level 4 (unless home institution agrees)

Content:

Developing sustainability literacy is an essential skill for professional practice. This module introduces you to the foundations of sustainability, environmental technologies, and nature-based solutions. Through lectures, seminars, and workshops, you will engage with systems thinking, ecological science, and applied green solutions, including renewable energy, waste management, water management and ecosystem resilience. Learners will explore how environmental technologies are helping to build climate resilience, investigate the contribution of AI in this field, and develop the knowledge, skills, and values necessary to understand sustainability in theory and practice, while also critically applying creative problem-solving and future-thinking approaches to real-world sustainability challenges. This includes a live brief assessment linked to the UN Sustainable Development Goals (SDGs).

➤ **Topics:**

- Renewable energy and energy management (including AI applications)
- Environmental technology solutions in waste management, water management, and geoengineering (including AI applications)
- Introductory nature-based solutions (erosion/flood prevention, wetland restoration, carbon sequestration, urban greening, rewilding) that contribute to climate resilience
- Biodiversity loss and invasive species
- Successional change and macroecology
- Enhancing ecosystem resilience and ecosystem services
- Sustainable development and the UN SDGs
- Environmental justice and perceptions
- Embedding AI/technology into sustainability practice

Teaching: weekly lectures, seminars and workshops

Assessment:

➤ **Study Option 1:**

Study Option 1 = Whole Year
Study Option 2 = Autumn
Study Option 3 = Spring

- Portfolio (3000 words):
 - A2 size poster of 1000 words equivalent
 - presentation (10 min). Equally weighted components and individually graded (50%)
- Briefing paper (3000 words) (50%)
- Study Options **2/3**:
- Part of study option 1 assessment

Note: methods of assessment listed are indicative only and may be subject to change

Last updated: 28/08/26 PJW

[Return to TOP](#)

LEVEL 5 – INTERMEDIATE

Module Code: GG5002

Module Title: Geographical Theory and Practice

Level: 5

Prerequisites: introductory university level module in research and fieldwork methods

Credit:

- Full Year: 8 (US) 15 ECTS
- Single Semester: 4 (US) 7.5 (ECTS)

Suitability:

- Study Options 1 or 2

Content:

This module (which is in two parts), focuses on the development of geographical thought and practice from the institutionalisation of the discipline to the present. In doing so, the module traces the shifting paradigms that have dominated the discipline and examines the multiple approaches now possible within geographical research and the methodologies that underpin them. Focussing on a range of topics, part student selected, the module will explore the diverse ways that geographers working in different paradigms have approached these topics.

Having developed a sound knowledge of geographical research, theory and practice, students will then develop an independent research proposal. In doing so, students will identify a topic of their choice, select a

Study Option 1 = Whole Year
Study Option 2 = Autumn
Study Option 3 = Spring

12

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suitable disciplinary perspective from which to examine it and an appropriate method of investigation. Within the first part of the module students will gain a thorough understanding of the nature of geographical research. In the second part of the module, students will apply this knowledge through the development of their own research project.

➤ **Autumn Semester content: Geographical Paradigms**

- Regional Geography
- Quantitative Geography
- Behavioural Geography
- Humanistic Geography
- Cultural Geography
- Radical/Marxist geography
- Feminist Geography
- Postcolonial Geography

➤ **Spring Semester content: Dissertation Proposal**

The second part of the module is devoted to the preparation of dissertation proposal for geography majors.

Teaching: weekly 3-hour lectures

Assessment:

➤ **Study Option 1:**

- In-class test – 90 minutes, short answers (30%)
- 10-minute PowerPoint presentation on dissertation proposal (35%)
- Dissertation Proposal – 3,250 words (35%)

➤ **Study Option 2:**

- In-class test – 90 minutes, short answers (100%)

Note: methods of assessment listed are indicative only and may be subject to change

Last updated: 28/08/26 PJW

[RETURN TO TOP](#)

Module Code: GG5003

Module Title: Advanced Research Methods and Project Management

Level: 5

Study Option 1 = Whole Year
Study Option 2 = Autumn
Study Option 3 = Spring

13

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Prerequisites: introductory university level module in research and fieldwork methods

Credit:

- Full Year: 8 (US) 15 ECTS
- Single Semester: 4 (US) 7.5 (ECTS)

Suitability:

- Study Options 1 or 2

Content:

This module will enable students to demonstrate a developing awareness of the skills required to operate as a professional in their subject area. The module also broadens their knowledge of how organisations undertake and monitor projects.

The module has two key elements:

In the autumn semester, students will develop a range of quantitative and qualitative skills that will support their interpretation of geographical phenomenon.

In the spring semester, students will put these developing skills to the test and consider the principles and practices for the design and management of research and work-based projects: project preparation through a series of skills workshops; a team-working project activity, and; reflection and associated assessments.

The module is skills-rich, including the development of team-working, interpersonal and interdisciplinary skills, critical self-reflection, communication and presentation, time management, and the ability to organise, strategise and prioritise.

➤ **Autumn Semester content: Statistics and Qualitative Data Analysis**

- Introduction To Data Analysis: SPSS
- Introduction To Contingency Tables (Chi-Square Analysis)
- Introduction To Correlation Analysis
- Introduction To Regression Analysis
- Introduction To t-test & ANOVA

➤ **Spring Semester content:**

- Defining project management
- Practical skills, Linear and Agile approaches for project management
- Practical skills, MS Teams and Padlet for project management

Teaching: weekly 3-hour lectures/3-hour computing sessions and 1-hour tutorials

Assessment:

➤ Study Option 1:

- Take-home assignment on statistics and statistical analysis (25%)
- Qualitative Report - 2000 words plus tables and diagrams (25%)
- Teamwork challenge (50%)

➤ Study Option 2:

- Take-home assignment on statistics and statistical analysis (50%)
- Qualitative Report - 2000 words plus tables and diagrams (50%)

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Last updated: 28/08/26 PJW

[Return To Top.](#)

Module Code: GG5021

Module Title: Rivers, Oceans and the Atmosphere

Level: 5

Prerequisites: introductory university level module about the environment/physical geography such as [GG4007](#) (or similar)

Credit:

- Full Year: 8 (US) 15 ECTS
- Single Semester: 4 (US) 7.5 (ECTS)

Suitability:

- Study Options 1 or 2 or 3

This module explores the physical science of Earth's river basins, coastlines, oceans and atmosphere, examines the key processes and principles and explores the interactions between the Earth's geosphere, hydrosphere and atmosphere.

This module will also explore the vulnerability of natural systems and landforms to climate change and human development and will seek to provide management strategies and solutions that will increase environmental and community resilience. Management strategies will look to include nature-based solutions such as natural flood management where possible. Environments to be explored include the dynamic coastal zone (including beaches, saltmarshes, estuaries and deltas), rivers and drainage basins, oceans and ocean circulation, and the atmosphere. Hydrological and sedimentological processes will be considered, following a source to sink approach. A variety of hydrospheric and atmospheric hazards will be considered, including riverine and

Study Option 1 = Whole Year
Study Option 2 = Autumn
Study Option 3 = Spring

15

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coastal flooding, sea-level rise, and severe weather hazards associated with ENSO, the Indian Ocean Dipole and the SE Asian Monsoon System. Fieldwork, GIS and remote sensing practical's will be integral to this module, providing real-world skills and training relevant to a wide variety of environmental science, hazards and geography careers.

➤ **Autumn Semester: Coasts - Catchment to Basin; Water on Land**

❖ ***Catchment to Basin*** (this includes a one-day fieldtrip)

- Estuaries
- Deltaic Environments
- Coastal processes
- Saltmarshes
- Coastal erosion and management
- Practical Coastal Change Mapping
- Coasts – Beaches
- Coasts – Dunes
- Coasts – Spits and Barriers

❖ ***Water on Land***

- Water on the Land: Exploring the river basin
- Runoff and River Basin Relationships
- River Basin Sediments
- River Metrics - River Towy workshop

➤ **Spring Semester content: The Ocean; The Atmosphere**

❖ ***The Ocean***

- Ocean surface circulation
- Thermohaline circulation
- El Nino, La Nina, ENSO
- Storms, Tsunami and Floods
- Exploring the Sea Floor: Bathymetry
- Oceans - Palaeo-climate records and isotopes

❖ ***The Atmosphere***

- Severe Weather Hazards
- The Atmosphere
- Moisture, clouds and precipitation
- Global Winds

Teaching: weekly 3-hour lectures/workshops/pc labs and one fieldtrip in Autumn

Assessment:

➤ Study Option 1:

- Estuary briefing paper (3000 words) (50%)
- Ocean-atmosphere poster (30%)
- Personal Reflective Log – 600 words (20%)

➤ Study Option 2:

- Estuary briefing paper (3000 words) (100%)

➤ Study Option 3:

- Ocean-atmosphere poster (60%)
- Personal Reflective Log – 600 words (40%)

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Last updated: 28/08/26 PJW

[Return to Top](#)

Module Code: GG5022

Module Title: Understanding Our World with GIS

Level: 5

Prerequisites: cartographic skills developed at introductory level such as [GG4006 Digital Mapping](#) or similar

Credit:

- Single Semester: 4 (US) 7.5 (ECTS)

Suitability:

- Note that this module is taught entirely within the **autumn semester** and is thus open for Study Options 1 or 2

Content:

This module builds and expand on the cartographic skills developed in the Level 4 module [GG4006 Digital Mapping](#), whilst also introducing new visualisation approaches.

As the importance of data science, big data and AI increases in our society, there is stronger need for data literacy and the ability to develop and implement analytical workflows. In fact, they are becoming essential transferrable skills for Environmental Scientists and Geographers.

Study Option 1 = Whole Year

17

Study Option 2 = Autumn

Study Option 3 = Spring

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This module focuses on how to obtain, process, integrate, analyse, visualise, and analyse geographical data within GIS software to discover and quantify spatial patterns so that we can understand, quantitatively and spatially, what is unfolding in the world.

Students will critically evaluate data, analytical approaches, and interpret the outcomes in relation to the principles of information and cartographic design. The module will touch upon the principles and methods of digital data collection and post-processing as well as methods for exploratory and core analytical techniques (e.g., buffer, spatial join, overlay, surface and network analysis) to discover patterns. Students will also gain practical experience of handling network and surface data models and their analytical use.

Lectures will introduce the principles of spatial and data analysis using ArcGIS Pro.

➤ **Topics:**

- Digital data collection and dissemination in the Information Age.
- The principles of remote sensing.
- The relational database, network, and surface data models.
- Exploratory data analysis.
- Spatial and non-spatial analytical concepts and techniques (e.g., buffer, join, distance).
- How to apply fundamental cartographic and data visualisation principles for effective data communication.

Teaching: Weekly 1-hour lecture followed by a 2-hour computer class

Assessment:

1,500-word report plus maps and analytical outputs (100%)

Note: methods of assessment listed are indicative only and may be subject to change

Last updated: 28/08/26 PJW

[Return to Top](#)

Module Code: GG5023

Module Title: Principles of Ecology and Conservation

Level: 5

Pre-requisites: introductory-level environmental science such as [GG4007](#) or similar

Credit:

- Single Semester: 4 (US) 7.5 (ECTS)

Suitability:

- Note that this module is taught entirely within the **autumn semester** and is thus open for Study Options 1 or 2

Content:

This module builds on material introduced at Level 4 [GG4007 Introduction to Environmental Science](#) or similar.

Ecological concepts are explained using a hierarchical approach: population, community and ecosystem levels of ecology are explored, highlighting the interactions between man and nature. A research-led approach is used to emphasise the models by which ecologists attempt to explain complex biological systems. Core factual material is provided using keynote lectures to explain concepts. The practical and fieldwork elements are designed to develop observing, recording, data analysis, data interpretation and presentation skills.

➤ **Topics:**

- Vegetation dynamics – change in plant community structure and diversity because of natural and human disturbance
- Populations – quantitative models of population; demography and life tables; environmental and demographic stochasticity; modelling populations with unstructured and structured equations; deterministic and stochastic population models; applications in the management of populations
- Behavioural ecology – the ecology of foraging; optimal foraging theory; games theory; female strategy and mate choice; mating systems, parental investments and sexual conflict
- Biogeography – models of spatial distribution of organisms; historical causes of biogeographic distributions; island biogeography

Teaching: weekly 2-hour lecture followed by a 1-hour seminar. One 4-hour fieldtrip

Assessment:

- 15-minute seminar presentation (40%)
- 1.5-hour multiple-choice question (60%)

Note: methods of assessment listed are indicative only and may be subject to change

Last updated: 28/08/26 PJW

[Return to Top](#)

Module Code: GG5024

Module Title: Contaminated Land, Assessment and Remediation

Level: 5

Pre-requisites: introductory-level physical geography such as [GG4009](#) or similar

Credit:

- Single Semester: 4 (US) 7.5 (ECTS)

Suitability:

Note that this module is taught entirely within the **Spring semester** and is thus open for Study Options 1 or 3

Content:

This module has three key components. First, an understanding of the fundamental principles of soil science is developed whereby the various soil properties and processes, including storage/retention and transport of water and chemicals in soil, are explained. This builds on what was covered in the Pedsosphere part of Our Dynamic Earth ([GG4009](#)). This provides a good support to developing an understanding of soil and hydrological interactions with soil nutrients and contaminants.

This knowledge of soil and water environmental interaction forms the essential base for introducing and explaining soil pollution, including the impact of pollutants on environmental systems (soil, water, plants and air) and human health. It also discusses pollution mitigation and control/remediation strategies. lectures are supported by fieldwork and laboratory practical sessions. The field and laboratory work components are designed to develop surveying, recording, measuring, sampling, laboratory testing, data analysis, data interpretation and presentational skills.

➤ **Topics:**

- Soil development and soil physical composition; soil texture, structure, stability, aeration and drainage, and how these influence soil physical processes.
- Soil colloids - inorganic (silicate clays, oxides and hydroxides of iron, aluminium), their genesis and mineralogical organisation; organic soil colloids (humus) - their importance in nutrient and water supply; exchange/adsorption/desorption reactions on soil surfaces, effect of pH on surface charge and soil chemistry.
- Introduction to soil contamination, basic principles, definition. Characteristics of polluting substances, pollutant transformations and rate-determining steps. Cause- effect control relationships; additive, synergistic, antagonistic effects; target organisms, toxicity and pollution transfer between the soil-water and soil-plant systems.
- Land Pollution: Soil physical, chemical and biological properties of soils, and their influence on migration, bioavailability and persistence of pollutants in the soil environment. Case studies of solid waste disposal, pollution impact of mining, industry and agriculture. Assessment and remediation of contaminated land.

Study Option 1 = Whole Year
Study Option 2 = Autumn
Study Option 3 = Spring

20

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- Pollution Control: Introduction to pollution control strategy/technology, economic and legislative control. Concepts of precautionary principle, vulnerability and risk. The Water Act 1989 and the Environment Act 1990 and the role of the Environment Agency in pollution control in England and Wales.

Teaching: weekly 2-hour lecture apart from three 2-hour practical sessions

Assessment:

- Soil analysis report (3000 words) (100%)

Note: methods of assessment listed are indicative only and may be subject to change

Last updated: 28/08/26 PJW

[Return to Top](#)

Module Code: GG5024

Module Title: Contaminated Land, Assessment and Remediation

Level: 5

Pre-requisites: introductory-level physical geography such as [GG4009](#) or similar

Credit:

- Single Semester: 4 (US) 7.5 (ECTS)

Suitability:

Note that this module is taught entirely within the **Spring semester** and is thus open for Study Options 1 or 3

Content:

This module has three key components. First, an understanding of the fundamental principles of soil science is developed whereby the various soil properties and processes, including storage/retention and transport of water and chemicals in soil, are explained. This builds on what was covered in the Pedosphere part of Our Dynamic Earth ([GG4009](#)). This provides a good support to developing an understanding of soil and hydrological interactions with soil nutrients and contaminants.

This knowledge of soil and water environmental interaction forms the essential base for introducing and explaining soil pollution, including the impact of pollutants on environmental systems (soil, water, plants and air) and human health. It also discusses pollution mitigation and control/remediation strategies. Lectures are supported by fieldwork and laboratory practical sessions. The field and laboratory work components are designed to develop surveying, recording, measuring, sampling, laboratory testing, data analysis, data

Study Option 1 = Whole Year
Study Option 2 = Autumn
Study Option 3 = Spring

21

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interpretation and presentational skills.

➤ **Topics:**

- Soil development and soil physical composition; soil texture, structure, stability, aeration and drainage, and how these influence soil physical processes.
- Soil colloids - inorganic (silicate clays, oxides and hydroxides of iron, aluminium), their genesis and mineralogical organisation; organic soil colloids (humus) - their importance in nutrient and water supply; exchange/adsorption/desorption reactions on soil surfaces, effect of pH on surface charge and soil chemistry.
- Introduction to soil contamination, basic principles, definition. Characteristics of polluting substances, pollutant transformations and rate-determining steps. Cause- effect control relationships; additive, synergistic, antagonistic effects; target organisms, toxicity and pollution transfer between the soil-water and soil-plant systems.
- Land Pollution: Soil physical, chemical and biological properties of soils, and their influence on migration, bioavailability and persistence of pollutants in the soil environment. Case studies of solid waste disposal, pollution impact of mining, industry and agriculture. Assessment and remediation of contaminated land.
- Pollution Control: Introduction to pollution control strategy/technology, economic and legislative control. Concepts of precautionary principle, vulnerability and risk. The Water Act 1989 and the Environment Act 1990 and the role of the Environment Agency in pollution control in England and Wales.

Teaching: weekly 2-hour lecture apart from three 2-hour practical sessions

Assessment:

- Soil analysis report (3000 words) (100%)

Note: methods of assessment listed are indicative only and may be subject to change

Last updated: 28/08/26 PJW

[Return to Top](#)

Module Code: GG5025

Module Title: Capitalist Societies

Level: 5

Pre-requisites: introductory-level geography useful

Credit:

- Single Semester: 4 (US) 7.5 (ECTS)

Suitability:

Note that this module is taught entirely within the **Autumn semester** and is thus open for Study Options 1 or 2

Content:

The module is designed to introduce students to the basic principles of investigating a range of contemporary global issues in terms of their political economy. This includes a wide range of spatial issues from the local to the global and the inter-linkages and process that bind them together. The key focus is to understand how contemporary capitalism works and plays out across different spatial levels and to highlight the processes that underpin it and the implications for different communities and their environments. This includes exploring relations between, state, business and citizens within the context of how we understand the global development challenges of climate change and sustainable development.

Through a series of instructor-led lectures students will be introduced to the manner in which capitalism has development and the mechanics of capital circulation, together with an understanding of how these processes of wealth accumulation and growth relate to the challenges of climate change and sustainable development. This will be understood in relation to how capitalism works set against cultural and social diversity and will question the issues of alienation, nature and sustainable development. Material and case studies will be taken from historical events and contemporary news stories and range from the global to the local.

Through a series of seminar sessions, students will explore how the topics discussed above pertain to an issue of their choice. In doing so they will consider the approaches geographers have used with regard to understanding capitalism, the epistemological principles upon which they are based, their positionalities and their connections with wider discourses. These can be historical or contemporary and pitched at a range of spatial scales to cover a range of global locations.

Teaching: weekly 2-hour lectures

Assessment:

- Online MCQ test – 50 questions (20%)
- 1-hour seen exam (80%)

Note: methods of assessment listed are indicative only and may be subject to change

Last updated: 28/08/26 PJW

[Return to Top](#)

Module Code: GG5026

Module Title: Advanced Research Methods and Statistics

Study Option 1 = Whole Year
Study Option 2 = Autumn
Study Option 3 = Spring

23

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Level: 5

Pre-requisites: introductory-level geographical research methods and statistics

Credit:

8 (US) 15 (ECTS)

Suitability: Study Option 1 only

Students will design, manage and execute an environmental science research project in a 'real-life' field-based setting. Students are tutored in aspects of research design: defining research questions, research philosophy and appropriate methodologies. They will learn practical aspects of research design such as logistical considerations of time and budget limitations, as well as data archiving. They will also be trained in quantitative and qualitative data analysis. Finally, they will learn how to collect, manipulate, and interpret statistical environmental and geographical data and apply this learning to their project-based investigations.

➤ **Topics:**

- Quantitative techniques including understanding p-values and statistical alpha errors, standard error, calculating 95% and 99% confidence intervals, t-test, ANOVA, linear regression and multiple regression, analysing frequency data
- Qualitative methods include data collection using interviews and analysis which will focus on different methods of textual analysis
- Planning for field-based investigations, logistical considerations, information archiving (manual and digital archives, blogs and cross-reference), field-based support tools and methodologies (location-based analysis, mobile technologies, etc.) through theoretical and practical example.
- Design, management, execution and communication of a field-based research project.

Teaching: weekly 3-hour lecture or computing session

Assessment:

- Individual quantitative 1,500-word take-home report plus graphics (25%)
- Individual qualitative 2,000-word report plus graphics (25%)
- Research proposal 3,500 words plus illustrations (50%)

Note: methods of assessment listed are indicative only and may be subject to change

Last updated: 28/08/26 PJW

[Return to Top](#)

Module Code: GG5027

Study Option 1 = Whole Year
Study Option 2 = Autumn
Study Option 3 = Spring

24

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Module Title: Cultural Geographies
Level: 5
Pre-requisites: introductory-level geography
Credit: Single Semester: 4 (US) 7.5 (ECTS)
Suitability: Note that this module is taught entirely within the Spring semester and is thus open for Study Options 1 or 3
Content: This module focuses on the development of geographical thought and practice from the institutionalisation of the discipline to the present. In doing so, the module traces the shifting paradigms that have dominated the discipline and examines the multiple approaches now possible within geographical research and the methodologies that underpin them. Focussing on a range of topics, part student selected, the module will explore the diverse ways that geographers working in different paradigms have approached these topics. Having developed a sound knowledge of geographical research, theory and practice, students will then develop an independent research proposal. In doing so, students will identify a topic of their choice, select a suitable disciplinary perspective from which to examine it and an appropriate method of investigation. Within the first part of the module students will gain a thorough understanding of the nature of geographical research. In the second part of the module, students will apply this knowledge through the development of their own research project.
Teaching: weekly 2-hour lectures and 2 full-day fieldtrips
Assessment: 3,000-word investigative report (100%) <i>Note: methods of assessment listed are indicative only and may be subject to change</i>
Last updated: 28/08/26 PJW

[Return to Top](#)

Module Code: GG5028
Module Title: Geomorphology, Geotechnics and Geohazards

Study Option 1 = Whole Year
 Study Option 2 = Autumn
 Study Option 3 = Spring

25

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Level: 5

Pre-requisites: introductory-level physical geography such as [GG4009](#) or [environmental](#) science

Credit:

- Single Semester: 4 (US) 7.5 (ECTS)

Suitability:

Note that this module is taught entirely within the **Spring semester** and is thus open for Study Options 1 or 3

Content:

This module presents a series of thematic taught sessions overviewing major geomorphological processes and landforms, sedimentary environments and geophysical hazards. The module builds upon foundations of [GG4009](#).

On completion of the module students will gain a detailed understanding of the major surface processes and their geomorphological significance and will be able to interpret a range of sedimentary environments.

Module themes will reflect on likely hazards linked to geomorphological processes, including floods, coastal change (including impacts of sea-level change on coastal environments), slope stability, geological controls on geomorphology such as fault movement and associated sediments (and sedimentary structures) created by events such as tsunamis and ash falls. The module emphasises the mastery of geomorphological skills through experiential learning closely associated to core lecture delivery.

The practical programme will aid students in evaluating key geomorphological concepts, learning and testing analytical techniques.

➤ **Topics:**

- Physical landscape change and antecedents including challenging norms of uniformity, singularity and sensitivity, hazard-risk-uncertainty-probability.
- Geomorphological techniques: measurement of form, scale and resolution of observation relative to change, making sense of the past, sediments and their environments, mapping and representation.
- Thematic study of geomorphological and sedimentary environments: introducing geological control, fluvial, coastal, desert, glacial/periglacial systems, slopes and mass movement.
- Systematically relating physical landscapes to associated geophysical hazards, including: floods, landscape instability (e.g. coastal, riverine, glacial and periglacial), sea-level change, fault movement and earthquakes, tsunami deposits and ash fall deposits.

Teaching: weekly 2-hour lectures, a few 3-hour computing sessions and 2 full-day fieldtrips

Assessment:

A field-based project report focusing on landform development (2,500 words plus associated graphics) (100%)

Note: methods of assessment listed are indicative only and may be subject to change

Last updated: 28/08/26 PJW

[Return to Top](#)

Module Code: GG5045

Module Title: Disasters, Society and Culture

Level: 5

Pre-requisites: introductory-level physical geography such as [GG4009](#) or environmental science

Credit:

- Full Year: 8 (US) 15 ECTS
- Single Semester: 4 (US) 7.5 (ECTS)

Suitability:

Study Options 1 or 2

Content:

This module introduces the key theories and concepts in the social science approaches to understanding disasters, one of the major global challenges facing humanity. It explores the social, cultural, political, economic and other factors that combine to construct vulnerabilities to disasters, and the ways in which these might be countered through disaster risk reduction (DRR) strategies.

These issues are explored at a range of spatial scales, from the local to the global, along with the inter-linkages and process that bind them together. The relationship between evolving theories and practice are explored through a number of case studies which consider developed and developing world examples across a variety of hazard types.

The challenges posed by the interdisciplinary approaches that are necessary to tackle disasters, and the need to communicate with a wide range of stakeholders, are examined. The complex range of factors influencing DRR implementation in particular contexts, and the variety of skills needed to evaluate DRR are investigated through fieldwork.

➤ **Topics:**

➤ **Autumn Semester:**

❖ ***Understanding the Social Approaches to Disaster***

- Introducing social approaches to disaster
- Disaster Risk Reduction (DRR) – what is DRR and how is it governed?
- The Sendai Framework
- Vulnerability and Resilience

Study Option 1 = Whole Year

27

Study Option 2 = Autumn

Study Option 3 = Spring

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- Data and Disasters
- Culture and Disaster
- Gender and Disasters
- The Grenfell Tower Fire

➤ **Spring Semester: The Challenges of Risk Communication; Community Resilience**

❖ ***The Challenges of Risk Communication***

- Communicating about risk
- Disaster Representations: myths and the media
- Providing hazard warnings
- Stakeholders and communication

❖ ***Community Resilience***

- Understanding Community Resilience
- Community resilience in London
- Investigating Kingston upon Thames

Teaching: weekly 1-hour lecture followed by a 2-hour seminar

Assessment:

➤ **Study Option 1:**

- DRR essay – 3,000 words (50%)
- 10-minute podcast with 750-word plan **or** 2,000-word research proposal (50%)

➤ **Study Option 2:**

- DRR essay – 3,000 words (50%)

Note: methods of assessment listed are indicative only and may be subject to change

Last updated: 28/08/26 PJW

[Return to Top](#)

LEVEL 6 – ADVANCED

Module Code: GG6020

Module Title: Development Geographies

Level: 6

Study Option 1 = Whole Year
Study Option 2 = Autumn
Study Option 3 = Spring

28

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Prerequisites: prior university-level study of human geography such as [GG5025](#) or [GG5027](#) or similar

Credits:

- Full Year: 8 (US) 15 (ECTS)
- Single Semester: 4 (US) 7.5 (ECTS)

Suitability: study Options 1 or 2

Content:

This module introduces students to critical issues of development including themes such as economic growth, poverty, exclusion, inequality, gender and conflict. It also explores the relations within and between countries and the challenges of development and aid in the context of globalisation. The module includes substantial fieldwork and independent desk-based research. Whilst it introduces theories of development, it is an applied module which seeks to empower students to debate contemporary geographical and environmental issues within an international context.

This module is divided into three sections. It begins by looking at theories of development. Then it continues looking at specific policy and development issues within a particular location. Finally it looks at development issues in a fieldwork context.

***** NOTE THAT THERE IS A FIELDTRIP TO SOUTH AFRICA IN THE SPRING SEMESTER *****

➤ **Autumn Semester: Development Theories**

❖ ***Theories of Development***

- Modernisation
- Dependency
- Neoliberalism
- Post-development
- Application of theory to contexts

❖ ***Themes and Scoping Report***

➤ **Spring Semester:**

In this semester, there's further scoping report developing and project planning for the overseas fieldtrip (normally to South Africa) in February.

Teaching: weekly 2-hour lecture/seminars and a week-long overseas fieldtrip

Assessment:

Study Option 1 = Whole Year
Study Option 2 = Autumn
Study Option 3 = Spring

➤ **Study Option 1:**

- Coursework: 2,500-word essay (40%)
- Coursework: 2,000-word scoping report (30%)
- Fieldwork Presentation: 15-minute presentation (30%)

➤ **Study Option 2:**

- Coursework: 2,500-word essay (100%)

Note: methods of assessment listed are indicative only and may be subject to change

Last updated: 28/08/26 PJW

[Return to TOP](#)

Module Code: GG6022

Module Title: The Science of Climate Change

Level: 6

Pre-requisites: introductory-level physical geography/environmental science

Credit:

- Single Semester: 4 (US) 7.5 (ECTS)

Suitability:

Note that this module is taught entirely within the **Autumn semester** and is thus open for Study Options 1 or 2

Content:

This module explores the science of climate change through an in-depth exploration of the components of the climate system and an examination of climate change indicators such as sea-level change and ocean acidification. The influence of human activities that contribute to climate change (such as greenhouse gas emissions and deforestation) will be explored. Students will learn to critically evaluate and discuss models of climate change and will model their own projections for the UK based on real data. Examination of the palaeo-record of past climate change will give context to the evaluation of future projected climate change scenarios.

➤ **Topics:**

- In-depth exploration of the components of the climate system.
- Exploration of climate modelling and climate projections on a local, regional and global scale.
- Unpick records of past climate in the Quaternary and Holocene.
- Practice methods of palaeo-climate reconstruction.

Study Option 1 = Whole Year
Study Option 2 = Autumn
Study Option 3 = Spring

30

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Geography and Environmental Science Modules for Visiting Students 2026/27

- Explore indicators of climate change, such as sea-level change, glacier ice loss and ocean acidification.
- Examine the influence of human activities that contribute to climate change, such as greenhouse gas emissions and deforestation.
- Evaluate future climate models and scenarios.

Teaching: weekly 2-hour lecture followed by 1-hour workshop (1 week will be a 2-hour practical)

Assessment:

- Climate science poster – 1000 words (100%)

Note: methods of assessment listed are indicative only and may be subject to change

Last updated: 28/08/26 PJW

[Return to TOP](#)

Module Code: GG6023

Module Title: Conservation Theory and Practice

Level: 6

Pre-requisites: introductory-level geography

Credit:

- Single Semester: 4 (US) 7.5 (ECTS)

Suitability: Note that this module is taught entirely within the **Spring semester** and is thus open for Study Options 1 or 3

Content:

This advanced module brings together conservation theory and practice to help students to understand how biodiversity is managed in a rapidly changing world. Students will begin with core ecological ideas such as island biogeography, before moving on to advanced tools used by conservation scientists, including GIS and species distribution models (SDMs) built from real climate data.

Throughout the module, students will see how ecological theory informs practical conservation decisions, particularly in response to climate-driven range shifts. Students will also explore conservation challenges in tropical developing countries, considering the social, economic, and ethical dimensions of conservation action. In the second half of the module, you will examine ecosystem services, learning how nature is valued, governed, and sometimes monetised through approaches such as Payments for Ecosystem Services.

A key component of the module is the **Tenerife fieldwork project**, where students will apply concepts

Study Option 1 = Whole Year

Study Option 2 = Autumn

Study Option 3 = Spring

31

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Geography and Environmental Science Modules for Visiting Students 2026/27

and methods from the course to real conservation questions. Through a combination of lectures, seminars, and fieldwork, students will develop both conceptual understanding and practical skills relevant to careers in conservation, environmental management, and research.

Teaching: 4 weekly 3-hour computing sessions; rest is two-hour lecture followed by 1-hour workshop. Plus One full week will be an overseas fieldtrip)

Assessment:

- 2,500-word fieldwork assignment (50%)
- 1,500-word research proposal (50%)

Note: methods of assessment listed are indicative only and may be subject to change

Last updated: 28/08/26 PJW

[Return to TOP](#)

Module Code: GG6024

Module Title: Climate Change Hazards, Resilience and Solutions

Level: 6

Prerequisites: prior university-level study of human geography such as [GG5025](#) or [GG5027](#) or similar

Credits:

- Full Year: 8 (US) 15 (ECTS)
- Single Semester: 4 (US) 7.5 (ECTS)

Suitability: study Options 1 or 2

Content:

The module tackles the key issues relating to climate change in the areas of science, policy and society. The module will investigate the current and future impact of climate change on coastal communities and habitats, with an in-depth assessment of risks associated with rising sea level and coastal flooding and enhanced coastal erosion. This will include a field trip to investigate coastal challenges in southeast England and explore mitigation and adaptation strategies that will enhance community and environmental resilience. The module will examine local and national strategies to adapt to and mitigate against the impacts of climate change. This will include investigations into climate adaptations in agriculture and the food industry, an overview of the transition to renewable energy sources, and an exploration of the environmental and socio-economic challenges faced within urban areas.

➤ **Topics:**

- Examine the influence of human activities that contribute to climate change, such as greenhouse gas emissions and deforestation.
- Evaluate future climate models and scenarios.
- Critically examine how climate change impacts environmental hazards, landscapes, societies and ecosystems.
- Evaluate climate change adaptation and mitigation strategies for different scenarios, e.g. heatwaves, drought and wildfires, riverine flooding (increased storm events), coastal flooding (sea-level rise), severe weather hazards, landslides, crop failure and famine.

Teaching: mainly weekly 2-hour lecture/seminars except for two/three-hour computing sessions for 3 weeks and one full-day fieldtrip.

Assessment:

- 3,000-word report (100%)

Note: methods of assessment listed are indicative only and may be subject to change

Last updated: 28/08/26 PJW

[Return to TOP](#)

Module Code: GG6021

Module Title: Land and Water Resources Management

Level: 6

Prerequisites: prior university-level study of physical geography

Credits:

- Full Year: 8 (US) 15 (ECTS)
- Single Semester: 4 (US) 7.5 (ECTS)

Suitability: study Options 1 or 2 or 3

Content:

The module examines the relationship between land and water management, global challenges associated with the management of land and water, and sustainable options to seek their resolution. The module will develop an understanding and critical evaluation of these challenges from several perspectives through the systematic investigation of land-use practices, the applications of soil science and linking practices to processes and patterns of land degradation, the interface between land management and water management, global concerns for water security, land use impacts on the wider environment, including climate, physical and socio-political drivers and an examination of the regional land-water management issues.

➤ **Overall topics covered include:**

- The definition and recognition of land and water resources problems, water scarcity and security, sustainability criteria, risk assessment, scales of approach and terms of reference.
- River basin management, investigation of the physical, social and geo-political relationships of integrated river basin management, historical contexts and the lessons of history, contemporary management systems, governance, regulation and ownership.
- Management of extremes: flood risk, flood vulnerability and flood management; droughts and drought management
- Water quality management of surface and groundwater, water pollution, water treatment, water quality objectives and compliance.
- Sustainable Urban Drainage and integrated storm-water management
- Water conservation, reuse and desalination as alternative strategies to tackling water resource challenges.
- Soil quality and its relationship with water, food production and environmental health, definitions, principles and conceptual models.
- Land degradation, nutrient management in farming systems, exploitation of soil fertility, cultivation practices and carbon turnover, loss of nitrogen, phosphorus and carbon and their wider implications, including water quality and climate change.
- Acid deposition, soil and water acidification and its wider implications, the role of farming, transport and industrial activities.
- Soil contamination, conceptual models and case studies of their toxicities/exposures, soil-water pathways and human and animal health implications
- Soil salinisation, causes and impacts on soil quality including agricultural production.
- Soil erosion and soil conservation management strategies

➤ **Autumn Semester Content: Water Resources Management**

- Global water resources challenges
- Water Scarcity and Drought Resilience
- A history of water management and IBM
- Water Footprint and Virtual water
- Dams and River regulation

- Groundwater management
- Flood management
- Water Conservation and reuse
- Desalination integration

➤ **Spring Semester Content: Land Resources Management**

- Overview of land and water resources management
- Agriculture nutrient use and Water Framework Directive (WFR)
- Water Quality
- Nutrients, agriculture and water quality
- Soil acidification and land degradation
- Soil erosion and land degradation
- Soil salinisation and land degradation
- Land cover, land use and soil organic carbon

Teaching: weekly 2/3-hour lecture/seminars

Assessment:

➤ **Study Option 1:**

- 3,000-word London water sustainability report (50%)
- 2-hour seen exam (50%)

➤ **Study Option 2:**

➤ 3,000-word London water sustainability report (100%)

- **Study Option 3:**
- TBC

Note: methods of assessment listed are indicative only and may be subject to change

Last updated: 28/08/26 PJW

[Return to TOP](#)

Module Code: GG6070

Module Title: The Challenge of Climate Change

Study Option 1 = Whole Year
Study Option 2 = Autumn
Study Option 3 = Spring

35

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Level: 6

Prerequisites: substantial prior study of intermediate-level study in geography/environment

Credits:

- Full Year: 8 (US) 15 (ECTS)
- Single Semester: 4 (US) 7.5 (ECTS)

Suitability: Study Options 1 or 2

Content:

This module focusses on understanding the challenges of climate change. It starts with an overview of the science of climate change, before moving on to an exploration of what this suggests about the potential changes in climate that may occur and the possible impacts this may have on physical and human systems in different parts of the world. This will provide the foundation for assessing what the physical and social challenges are likely to be that may need addressing into the future, in essence the risks that climate change poses. But this topic will also involve exploring some of the challenges faced in attempting to address these risks, such as issues of uncertainty, cost, current lifestyle trajectories and different visions of potential solutions, which can act as barriers to action.

➤ **Autumn Semester:**

❖ ***The Science of Climate Change***

- Climate Change Forcings
- Palaeoclimate Archives and Proxies
- Palaeoclimate proxies workshop
- Climate models
- Quaternary Climate Change

❖ ***Indicators of Climate Change***

- Anthropogenic greenhouse gas emissions
- Sea Level Rise: Cryosphere melting and thermal expansion
- Ocean acidification
- Deforestation, soil, and the carbon cycle
- Terrestrial systems

➤ **Spring Semester:**

❖ ***Impacts and Hazards of Climate Change***

- Climate Change and atmospheric hazards
- Fire activity and climate change
- Coastal and ocean systems
- Coastal flooding and climate change
- Natural Disasters and climate change

Study Option 1 = Whole Year

36

Study Option 2 = Autumn

Study Option 3 = Spring

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❖ ***Adaptation and Mitigation to Climate Change***

- Socioeconomic indicators of climate change: from health issues to agricultural impacts
- Are we entering the Anthropocene?
- Mitigation of climate change: an introduction
- Workshop on climate change migrations
- Adaptation to climate change: an introduction
- Transport and emissions

Teaching: weekly 2-hour lectures followed by an 1-hour seminar

Assessment:

- Study Option 1:
- Climate Science poster – 1000 words (50%)
- Climate Hazards report – 3000-word essay (50%)
- Study Option 2:
- Written assignment - 2,500 words (100%)

Note: methods of assessment listed are indicative only and may be subject to change

Last updated: 28/08/26 PJW

[Return to TOP](#)

Module Code: GG6440

Module Title: Geophysical Hazards: Processes and Disaster Risk Reduction

Level: 6

Pre-requisites: introductory-level physical geography/environmental science

Credit:

- Single Semester: 4 (US) 7.5 (ECTS)

Suitability:

Note that this module is taught entirely within the **Autumn semester** and is thus open for Study Options 1 or 2

The module presents a series of thematic taught sessions (classroom and field-based) overviewing geophysical hazards, accompanying impacts, and how risk can be limited through disaster risk reduction methods. In studying earthquakes, volcanoes and tsunamis, module curricula will provide a detailed exploration of the scientific processes underpinning these hazards. Through gaining a more detailed understanding of the scientific processes and mechanisms that drive the various geophysical hazards, students are provided with the knowledge base required to record evidence of past geophysical events for a given location. The fieldwork programme will provide the students with the opportunity to apply their knowledge, produce geophysical hazard risk maps, investigate monitoring and mitigation strategies, and explore and assess community resilience and disaster risk reduction in volcanic regions.

➤ **Topics:**

- Geological and Tectonic Controls on Geomorphology
- Earthquakes and DRR
- Introduction To Volcanoes and Volcanic Hazards
- Community Resilience in Volcanic Regions
- **Tenerife Fieldtrip**
- GIS workshop: Hazard Maps
- DRR - New Zealand EQ case study
- Introduction to Tsunamis and DRR
- Tourism and DRR

Teaching: weekly 2-hour lecture followed by 1- or 2-hour workshop (1 entire week will be an overseas fieldtrip)

Assessment:

- 2,500-word fieldtrip report (100%)

Note: methods of assessment listed are indicative only and may be subject to change

Last updated: 28/08/26 PJW

[Return to Top](#)

Module Code: GG6460

Module Title: Solving Real World Data with GIS

Level: 6

Pre-requisites: Prior study of GIS such as [GG4006 Digital Mapping](#) and [GG5022 Understanding Our World](#) with GIS or similar

Credit:

- Single Semester: 4 (US) 7.5 (ECTS)

Suitability:

Note that this module is taught entirely within the **Spring semester** and is thus open for Study Options 1 or 3

Our world is faced with a myriad of challenges, ranging from climate change to air pollution, conflict, poverty and crime. These environmental and geographical challenges inherently contain spatial (and often spatial-temporal) patterns that are often key to the understanding of the high risk areas (hotspots), the patterns of distribution (density surface) or the risk factors (spatial regression) that are causing such challenges. Building on the previous GIS modules GG4006 and GG5022, this advanced module focuses on the following two aims:

- (1) expanding the knowledge base on the methods for analysing spatial and quantitative data, and
- (2) applying them to tackle real world challenges and interpreting the outcomes to offer meaningful results.

In other words, students will utilise the power of GIS as a means to analyse and model geographic data for interpreting them. It provides practical experience of using a broad spectrum of geospatial data and spatial analytic techniques in contexts related to 'real world' problems. Application areas may include, but are not limited to, area classification and geomarketing, crime mapping and geographical profiling, disease mapping, and environmental modelling.

While the methods will be introduced and applied within the platform of GIS, the principles of these methods and the critical thinking behind them are applicable across other platforms. The foundation of AI and machine learning will also be covered which will help understand how their power can be harnessed to refine the outcomes of our analysis.

➤ **Topics:**

- Collecting and evaluating digital data from wider sources.
- Handling and analysing spatial data to extract meaningful information.
- Visualising and presenting spatial data in an intuitive and informative way.
- Applying spatial analytical methods for solving geographical challenges.

Teaching: weekly 2-hour practical and 1-hour seminar

Assessment:

- 2,000-word research project, accompanied by relevant maps & graphs (histograms, scatter plots) (100%)

Note: methods of assessment listed are indicative only and may be subject to change

Last updated: 28/08/26 PJW

[Return to Top](#)

Study Option 1 = Whole Year
Study Option 2 = Autumn
Study Option 3 = Spring

Module Code: GG6470
Module Title: Communities and Social Justice
Level: 6
Pre-requisites: Prior study of human/social geography
Credit: • Single Semester: 4 (US) 7.5 (ECTS)
Suitability: Note that this module is taught entirely within the Autumn semester and is thus open for Study Options 1 or 2
Content: This module looks at social, spatial and environmental injustice and the ways in which such issues can be addressed. Using case studies, which include but are not limited to under-served, indigenous, refugee and asylum seekers the module looks at the social, cultural, economic and political factors that underpin the rights and the denial for some communities to access land and resources, citizenship, freedom of expression, employment, shelter, accommodation and or food security. Students will also examine social movements and forms of activism as well as policy initiatives that seek to redress social injustice and consider the role of research in raising public awareness of cases of social, spatial and environmental injustice at a range of spatial scales. The module covers both theoretical and applied material and the assessment provides students with an opportunity to appraise real world situations, through fieldwork, external professional input and creative thinking, enhancing students' practical skills and employability.
Teaching: weekly 2-hour lectures and two 4-hour fieldtrips
Assessment: • Concept map (30%) • 3,000-word report (70) <i>Note: methods of assessment listed are indicative only and may be subject to change</i>
Last updated: 28/08/26 PJW

[Return to Top](#)

Module Code: GG6480

Study Option 1 = Whole Year
 Study Option 2 = Autumn
 Study Option 3 = Spring

40

The University makes every effort to ensure that module availability & content is correct at the time of publishing, but it cannot accept responsibility for subsequent changes, as part of the University's policy of continuous improvement & development.

Module Title: Water Resources Management
Level: 6
Pre-requisites: prior university-level study of physical geography
Credit: Single Semester: 4 (US) 7.5 (ECTS)
Suitability: - Note that this module is taught entirely within the Autumn semester and is thus open for Study Options 1 or 2 - This module is also the first half of GG6021
➤ Content: The module examines global water resource challenges and sustainable management solutions. Students will develop a critical evaluation of these challenges at a variety of scales through the systematic investigation of the component challenges, the interface between the components and their relationship to sustainable development, including resource assessment and resource use; water scarcity and security and water management decision-making. Students will critically examine and debate natural (including climate) and socio-political drivers, mitigation, and adaptive environmental management strategies. The module will be spatially nested, examining broad global challenges, regional investigations in developed and developing world contexts, and local case studies to exemplify, compare and contrast experiences. ➤ Topics: - Global water resources challenges - Water Scarcity and Drought Resilience - A history of water management and IBM - Water Footprint and Virtual water - Dams and River regulation - Groundwater management - Flood management - Water Conservation and reuse - Desalination integration
Teaching: weekly 2-hour lectures and one 1-day fieldtrip
Assessment: 3,000-word London water sustainability report (100%) <i>Note: methods of assessment listed are indicative only and may be subject to change</i>
Last updated: 28/08/26 PJW

[Return to Top](#)

Study Option 1 = Whole Year
Study Option 2 = Autumn
Study Option 3 = Spring