



**Swansea University
Prifysgol Abertawe**

**FACULTY OF SCIENCE AND
ENGINEERING**

**UNDERGRADUATE STUDENT
HANDBOOK**

YEAR 3 (FHEQ LEVEL 6)

**BSC ENVIRONMENTAL SCIENCE AND THE CLIMATE
EMERGENCY**

UNDERGRADUATE PROGRAMMES

**SUBJECT SPECIFIC
PART TWO OF TWO
MODULE AND COURSE STRUCTURE
2022-23**

DISCLAIMER

The Faculty of Science and Engineering has made all reasonable efforts to ensure that the information contained within this publication is accurate and up-to-date when published but can accept no responsibility for any errors or omissions.

The Faculty of Science and Engineering reserves the right to revise, alter or discontinue degree programmes or modules and to amend regulations and procedures at any time, but every effort will be made to notify interested parties.

It should be noted that not every module listed in this handbook may be available every year, and changes may be made to the details of the modules. You are advised to contact the Faculty of Science and Engineering directly if you require further information.

The 22-23 academic year begins on 19 September 2022

Full term dates can be found [here](#)

DATES OF 22-23 TERMS

19 September 2022 – 16 December 2022

9 January 2023 – 31 March 2023

24 April 2023 – 09 June 2023

SEMESTER 1

19 September 2022 – 27 January 2023

SEMESTER 2

30 January 2023 – 09 June 2023

SUMMER

12 June 2023 – 22 September 2023

IMPORTANT

Swansea University and the Faculty of Science of Engineering takes any form of **academic misconduct** very seriously. In order to maintain academic integrity and ensure that the quality of an Award from Swansea University is not diminished, it is important to ensure that all students are judged on their ability. No student should have an unfair advantage over another as a result of academic misconduct - whether this is in the form of **Plagiarism, Collusion** or **Commissioning**.

It is important that you are aware of the **guidelines** governing Academic Misconduct within the University/Faculty of Science and Engineering and the possible implications. The Faculty of Science and Engineering will not take intent into consideration and in relation to an allegation of academic misconduct - there can be no defence that the offence was committed unintentionally or accidentally.

Please ensure that you read the University webpages covering the topic – procedural guidance [here](#) and further information [here](#). You should also read the Faculty Part One handbook fully, in particular the pages that concern Academic Misconduct/Academic Integrity. You should also refer to the Faculty of Science and Engineering proof-reading policy and this can be found on the Community HUB on Canvas, under Course Documents.

Welcome to the Faculty of Science and Engineering!

Whether you are a new or a returning student, we could not be happier to be on this journey with you.

This has been a challenging period for everyone. The COVID-19 pandemic has prompted a huge change in society as well as how we deliver our programmes at Swansea University and the way in which you study, research, learn and collaborate. We have been working hard to make sure you will have or continue to having an excellent experience with us.

We have further developed some exciting new approaches that I know you will enjoy, both on campus and online, and we cannot wait to share these with you.

At Swansea University and in the Faculty of Science & Engineering, we believe in working in partnership with students. We work hard to break down barriers and value the contribution of everyone. Our goal is an inclusive community where everyone is respected, and everyone's contributions are valued. Always feel free to talk to academic staff, administrators, and your fellow students - I'm sure you will find many friendly helping hands ready to assist you.

We all know this period of change will continue and we will need to adapt and innovate to continue to be supportive and successful. At Swansea we are committed to making sure our students are fully involved in and informed about our response to challenges.

In the meantime, learn, create, collaborate, and most of all – enjoy yourself!

Professor Johann (Hans) Sienz
Interim Pro-Vice Chancellor/Interim Executive Dean
Faculty of Science and Engineering



Faculty of Science and Engineering	
Interim Pro-Vice Chancellor/Interim Executive Dean	Professor Johann Sienz
Head of Operations	Mrs Ruth Bunting
Associate Dean – Student Learning and Experience (SLE)	Professor Paul Holland
School of Biosciences, Geography and Physics	
Head of School: Siwan Davies	
School Education Lead	Laura Roberts
Head of Geography	Kevin Rees
Geography Programme Director	Joanne Maddern
Year Coordinators	Year 0 – Dr Kath Ficken Year 1 – Dr Kath Ficken Year 2 – Dr Nick Felstead Year 3 – Professor Neil Loader PGT – Dr Iain Robertson

STUDENT SUPPORT

The Faculty of Science and Engineering has two **Reception** areas - Engineering Central (Bay Campus) and Wallace 223c (Singleton Park Campus).

Standard Reception opening hours are Monday-Friday 9am-5pm.

The **Student Support Team** provides dedicated and professional support to all students in the Faculty of Science and Engineering. Should you require assistance, have any questions, be unsure what to do or are experiencing difficulties with your studies or in your personal life, our team can offer direct help and advice, plus signpost you to further sources of support within the University. There are lots of ways to get information and contact the team:

Email: studentsupport-scienceengineering@swansea.ac.uk (Monday–Friday, 9am–5pm)

Call: +44 (0) 1792 295514 and 01792 6062522 (Monday-Friday, 10am–12pm, 2–4pm).

Zoom: By appointment. Students can email, and if appropriate we will share a link to our Zoom calendar for students to select a date/time to meet.

The current student **webpages** also contain useful information and links to other resources:

<https://myuni.swansea.ac.uk/fse/coe-student-info/>

READING LISTS

Reading lists for each module are available on the course Canvas page and are also accessible via <http://ifindreading.swan.ac.uk/>. We've removed reading lists from the 22-23 handbooks to ensure that you have access to the most up-to-date versions. Access to print material in the library may be limited due to CV-19; your reading lists will link to on-line material whenever possible. We do not expect you to purchase textbooks, unless it is a specified key text for the course.

THE DIFFERENCE BETWEEN COMPULSORY AND CORE MODULES

Compulsory modules must be **pursued** by a student.

Core modules must not only be **pursued**, but also **passed** before a student can proceed to the next level of study or qualify for an award. Failures in core modules must be redeemed.

Further information can be found under “Modular Terminology” on the following link -

<https://myuni.swansea.ac.uk/academic-life/academic-regulations/taught-guidance/essential-info-taught-students/your-programme-explained/>

Year 3 (FHEQ Level 6) 2022/23
Environmental Science and the Climate Emergency
 BSc Environmental Science and the Climate Emergency with a Foundation Year[F771]

Compulsory Modules

Semester 1 Modules	Semester 2 Modules
BIO331 Professional skills in conservation 20 Credits Dr PJ Neyland/Dr DW Forman/Dr WE Harris/Dr SC Hocking/...	
Total 120 Credits	

Optional Modules

Choose exactly 30 credits

GEC331 is the welsh equivalent of GEG331

GEC331	Traethawd Estynedig Daearyddiaeth	Prof NJ Loader/Dr OH Elias/Dr RH Meara/..	TB1+2	30
GEG331	Dissertation Report: Geography	Prof NJ Loader/Prof SH Doerr/Dr NJ Felstead/..	TB1+2	30

And

Choose exactly 10 credits

GEC332	Cefnogaeth Traethawd Hir	Prof NJ Loader/Dr RH Meara	TB1+2	10
GEG332	Dissertation Support: Geography	Prof NJ Loader/Prof SH Doerr/Dr NJ Felstead/..	TB1+2	10

And

Choose exactly 60 credits

BIO329	Climate Change Biology	Prof KW Tang	TB1	10
BIO330	Tropical marine ecology and conservation	Dr CE Davies/Dr N Esteban	TB1	10
BIO337	Biodiversity	Dr JN Griffin	TB1	10
BIO338	Polar Biology	Prof KW Tang	TB2	10
BIO341	Plant Conservation and Ecology	Dr AP Devine	TB1	10
GEG329	Animating Migration Theory	Prof SV Shubin	TB1	20
GEG337	Wildfires	Prof SH Doerr	TB1	20
GEG341	Contemporary Rural Britain	Dr KH Halfacree	TB2	20
GEG344	The Cryosphere in a Changing Climate	Prof T Murray/Dr SL Cornford/Dr J Hiemstra/..	TB1	20
GEG348	Plate Tectonics and Global Geophysics	Prof B Kulesa	TB2	20
GEG358	Measuring Climate Change	Dr I Robertson/Prof MH Gagen/Prof NJ Loader/..	TB2	20

Year 3 (FHEQ Level 6) 2022/23
Environmental Science and the Climate Emergency
 BSc Environmental Science and the Climate Emergency[F770]

Compulsory Modules

Semester 1 Modules	Semester 2 Modules
BIO331 Professional skills in conservation 20 Credits Dr PJ Neyland/Dr DW Forman/Dr WE Harris/Dr SC Hocking/...	
Total 120 Credits	

Optional Modules

Choose exactly 30 credits

GEC331 is the welsh equivalent of GEG331

GEC331	Traethawd Estynedig Daearyddiaeth	Prof NJ Loader/Dr OH Elias/Dr RH Meara/..	TB1+2	30
GEG331	Dissertation Report: Geography	Prof NJ Loader/Prof SH Doerr/Dr NJ Felstead/..	TB1+2	30

And

Choose exactly 10 credits

GEC332	Cefnogaeth Traethawd Hir	Prof NJ Loader/Dr RH Meara	TB1+2	10
GEG332	Dissertation Support: Geography	Prof NJ Loader/Prof SH Doerr/Dr NJ Felstead/..	TB1+2	10

And

Choose exactly 60 credits

BIO329	Climate Change Biology	Prof KW Tang	TB1	10
BIO330	Tropical marine ecology and conservation	Dr CE Davies/Dr N Esteban	TB1	10
BIO337	Biodiversity	Dr JN Griffin	TB1	10
BIO338	Polar Biology	Prof KW Tang	TB2	10
BIO341	Plant Conservation and Ecology	Dr AP Devine	TB1	10
GEG329	Animating Migration Theory	Prof SV Shubin	TB1	20
GEG337	Wildfires	Prof SH Doerr	TB1	20
GEG341	Contemporary Rural Britain	Dr KH Halfacree	TB2	20
GEG344	The Cryosphere in a Changing Climate	Prof T Murray/Dr SL Cornford/Dr J Hiemstra/..	TB1	20
GEG348	Plate Tectonics and Global Geophysics	Prof B Kulesa	TB2	20
GEG358	Measuring Climate Change	Dr I Robertson/Prof MH Gagen/Prof NJ Loader/..	TB2	20
GEG363	Volcanology	Dr KJ Preece/Dr PG Albert/Prof SM Davies/..	TB2	20

BIO329 Climate Change Biology

Credits: 10 Session: 2022/23 September-January

Pre-requisite Modules:

Co-requisite Modules:

Lecturer(s): Prof KW Tang

Format: Lectures = 13;
Paper discussions = 3;
Tutorial = 1;
Drop-in sessions = 2;
Review session = 1
Contact Hours will be delivered through a blend of live activities online and on-campus, and may include, for example, lectures, seminars, practical sessions and Academic Mentoring sessions.

Delivery Method: All Programmes will employ a blended approach to delivery using the Canvas Digital Learning Platform for live and self-directed online activity, with live and self-directed on-campus activities each week. Students may also have the opportunity to engage with online versions of sessions delivered on-campus

Lectures

Paper discussions

Tutorial

Drop-in meetings

Module Aims: The module examines the intricate connections between air, land and water in regulating the global climate system, and how that in turn affects planetary scale biology and ecology. Major past and present climate events and projected climate change, and their global ecological and environmental consequences will also be covered.

Module Content: Lectures:

1. Our planet's climate system - basic characteristics and driving forces; timescales, feedbacks and variations
2. Basic planetary physics in climate regulation - heat balance; ocean and atmospheric circulations; tropical cyclone formation
3. Basic planetary chemistry in climate regulation - sea-air gas exchange; oceanic control of carbon; rock cycle; transfer of particles and aerosols
4. Basic planetary biogeochemistry in climate regulation - climatically active bioproducts; biogeochemical cycles and climate
5. Climate history: glacial-interglacial cycle and global change - methods in palaeoclimatology; geological evolution of climate; Quaternary glaciations
6. Climate history: the last 12,000 years and its impacts on human history - Medieval Warm Period; Little Ice Age; effects on human history
7. ENSO: from climate to fish and beyond - tropospheric pressure systems; Southern Oscillation; El Nino and La Nina; teleconnections
8. Gulf Stream and NAO: linchpin of Europe's climate - discovery and significance of the Gulf Stream; NAO effects on North Atlantic climate and ecology
9. PDO: from fish to climate and beyond - discovery and significance of PDO; effects on Pacific climate and ecology; synergistic effects with ENSO; other climate indices
10. Our planet's future - CO₂ and global warming; natural variability vs. anthropogenic forcing; projected trends
11. Our planet's future - socioeconomic impacts; climate change in coastal zones
12. Our planet's future - ocean acidification
13. Our planet's future - mitigation and response; prospect of geoengineering

Paper discussions:

1. Kasting et al. (1988) How climate evolved on the terrestrial planets. *Scientific America* 256:90-97
2. Rahmstorf (2002) Ocean circulation and climate during the past 120,000 years. *Nature* 419:207-214
3. Zhang et al. (2007) Global climate change, war, and population decline in recent human history. *PNAS* 104:19214-19219

Tutorial:

Radiative budget model and simple box model for climate change predictions

Topics described are indicative and may be subject to change due to staff availability

Intended Learning Outcomes: At the end of this module the students will be able to:

LO1) Compare and contrast the evolution of different planetary climate systems (plate tectonics, carbonate cycle, atmospheric chemistry).

LO2) Explain how planetary physics (heat balance, mass transport, atmospheric and ocean circulations) affects the global climate.

LO3) Explain how planetary chemistry (trace gases, carbonate system, nutrient cycles) affects the global climate.

LO4) Describe and discuss the formation of major climate and weather phenomena and their effects on global ecology.

LO5) Interpret historical climate data and relate them to impacts on life on Earth.

LO6) Demonstrate knowledge of the ecological and socioeconomic impacts of recent rapid climate change.

Assessment:
Coursework 1 (10%)
Coursework 2 (20%)
Coursework 3 (10%)
Coursework 4 (60%)

Assessment Description: coursework 1 = 10% (short questions based on paper discussion; 300 words max.)
coursework 2 = 20% (short questions and quantitative skill questions based on paper discussion; 500 words max.)
coursework 3 = 10% (short questions based on paper discussion; 300 words max.)
coursework 4 = 60% (directed reading essay based on independent literature research; 1500 words max.)

Moderation approach to main assessment: Second marking as sampling or moderation

Assessment Feedback: Written feedback on writing assignments and exam scripts. Individual formative verbal feedback during drop-in sessions.

Failure Redemption: Year 3 modules can be failed down to zero. August deferrals can be provided under extenuating circumstances.

Additional Notes: Delivery of both teaching and assessment will be blended including live and self-directed activities online and on-campus.

All modules are subject to staff availability and may be restricted by student number. No pre-requisite required. Normally available to elective, visiting or exchange students. Please note that any failures are non-redeemable, there are no resits for Year 3 modules.

BIO330 Tropical marine ecology and conservation	
Credits: 10 Session: 2022/23 September-January	
Pre-requisite Modules:	
Co-requisite Modules:	
Lecturer(s): Dr CE Davies, Dr N Esteban	
Format:	Lecture based contact hours (100%) Contact Hours will be delivered through a blend of live activities online and on-campus, and may include, for example, lectures, seminars, practical sessions and Academic Mentoring sessions.
Delivery Method: All Programmes will employ a blended approach to delivery using the Canvas Digital Learning Platform for live and self-directed online activity, with live and self-directed on-campus activities each week. Students may also have the opportunity to engage with online versions of sessions delivered on-campus	
Lecture based	
Module Aims: This module will provide a holistic overview of the ecology and conservation of important marine ecosystems, and will place this information within the context of ecosystem services, and their value to humanity.	
This module will consist of up to 12 lectures/seminars on the following topics:	
<ul style="list-style-type: none"> • Diversity and biology of coral reef communities • Structure and function of seagrass meadows (temperate and tropical) • Mangrove forest ecology • Connectivity across the tropical marine seascape • The ecosystem services of tropical marine systems • Response of coral reef systems to climate change and ocean acidification • Degradation of tropical marine systems • Resilience thinking and the management of tropical marine systems 	
The module also contains a workshop session and additional direct contact with the module lead lecturer.	
Module Content: - Diversity and biology of coral reef communities - Structure and function of seagrass meadows (temperate and tropical) - Mangrove forest ecology - Connectivity across the tropical marine seascape - The ecosystem services of tropical marine systems - Response of coral reef systems to climate change and ocean acidification - Degradation of tropical marine systems - Resilience thinking and the management of tropical marine systems	
Intended Learning Outcomes: LO1) Develop an up-to-date knowledge of the ecology and biology of tropical marine systems,	
LO2) Be able to describe the major factors driving the diversity and productivity of tropical marine systems,	
LO3) Demonstrate a synthesis of the ecosystem service value of tropical marine systems,	
LO4) Articulate how local, regional and global scale anthropogenic processes are degrading tropical marine systems,	
LO5) Have a knowledge base of how these complex ecosystems can be managed in a sustainable manner.	
Assessment:	Coursework 1 (50%) Coursework 2 (50%)
Assessment Description: Short Essay – Mangroves =50% Infographic – Seagrass = 50%	
Moderation approach to main assessment: Not applicable	
Assessment Feedback: Annotated examination scripts	
Failure Redemption: Year 3 modules can be failed down to zero. August deferrals can be provided under extenuating circumstances.	

Additional Notes: Delivery of both teaching and assessment will be blended including live and self-directed activities online and on-campus.

All modules are subject to staff availability and may be restricted by student number or prerequisites.

This module also provides compulsory preparation for students undertaking the Tropical marine field module (BIO327)

Normally available to elective, visiting or exchange students. Please note that any failures are non-redeemable, there are no resits for Year 3 modules.

BIO331 Professional skills in conservation

Credits: 20 Session: 2022/23 September-January

Pre-requisite Modules:

Co-requisite Modules:

Lecturer(s): Dr PJ Neyland, Dr DW Forman, Dr WE Harris, Dr SC Hocking, Dr LJ Roberts

Format: 40 hrs field trips
8 hrs lectures/workshops
6 hours drop-in sessions
1 hr feedback
Contact Hours will be delivered through a blend of live activities online and on-campus, and may include, for example, lectures, seminars, practical sessions and Academic Mentoring sessions.

Delivery Method: All Programmes will employ a blended approach to delivery using the Canvas Digital Learning Platform for live and self-directed online activity, with live and self-directed on-campus activities each week. Students may also have the opportunity to engage with online versions of sessions delivered on-campus

Blended learning including: Field excursions, ICT workshops, independent study, lectures

Module Aims: This field based module will introduce students to the professional techniques utilised to monitor and study animals and plants in a variety of terrestrial habitat types and in relation to conservation management and biodiversity monitoring in the United Kingdom. The course places a strong emphasis on ecological census techniques and basic classification and taxonomy. Students will develop key techniques relevant to the environmental sector including Protected Species (specifically birds, amphibians, mammals, reptiles and plants), River and Phase 1 habitat surveys and Environmental Impact Assessment. Students will also learn about the biotic and abiotic factors that define different UK habitats and be introduced to the natural history of Wales. A focus is on developing key transferable skills that enhance employability such as problem solving, data analysis, report writing, evaluation, communication and teamwork. This module is therefore suitable for students wishing to pursue a career in ecological consultancy or conservation.

Module Content: This module is a five day field course that runs in June. Daily activities will be undertaken in local habitats in and around south Wales and the Gower Area of Outstanding Natural Beauty. Due to the mode of teaching, the material below is indicative of that covered and is subject to change depending on staff availability, weather conditions and Covid-19 restrictions. Lectures and a will take place on campus on the morning of each day trip. There will be additional workshops in Semester 1.

Day 1

Introduction lecture
Grassland lecture
Gower Grassland fieldwork

Day 2

Legislation lecture
Protected Species lecture
Phase I lecture
Phase I mapping fieldwork

Day 3

Common Standards Monitoring (CSM) lecture
CSM fieldwork sand dunes Gower

Day 4

Rivers lecture
Rivers fieldwork Gower

Day 5

Preliminary Ecological Appraisal (PEA) lecture
PEA fieldwork Crymlyn Burrows

Workshops and independent study: Phase 1 digital habitat mapping (Digimap), NBN database, report writing and data analysis

Intended Learning Outcomes: At the end of this module, the student should be able to:

- LO1). Describe and utilise primary professional ecological census techniques to survey and monitor plant and animal populations and habitats
- LO2). Recognise and discuss the important features and designations of local UK habitats and communities of conservation importance
- LO3). Identify important animal and plant species, particularly indicator and priority species of conservation importance
- LO4). Critically evaluate UK and European conservation protocols particularly in terms of local and national Acts and Directives and create effective management strategies to maintain and enhance conservation
- LO5). Analyse, present and interpret ecological data and synthesise ecological reports to a professional standard. This includes a Preliminary Ecological Appraisal report and associated budget for surveying and post-development monitoring.
- LO6). Work professionally within a group and evaluate environmental risks

Assessment:
Coursework 1 (20%)
Coursework 2 (30%)
Coursework 3 (50%)

Assessment Description: CW1 Grassland poster

CW2 Report – choice of freshwater (River Habitat Survey and BMWP water quality assessment) or common standards monitoring of sand dunes

CW3 Preliminary Ecological Appraisal Report (PEAR) (2000 words).

Moderation approach to main assessment: Second marking as sampling or moderation

Assessment Feedback: Class feedback

Individually annotated reports

Drop-in sessions

Failure Redemption: As this is a Year 3 module there is no opportunity to redeem failure, though if there are extenuating circumstances students would be offered a non-field based alternative module BIL300. Due to the nature of the field-based activities, if more than 50% of the assessment is missed students will be required to default onto the alternative module.

Additional Notes: Delivery of both teaching and assessment will be blended including live and self-directed activities online and on-campus.

All modules are subject to staff availability and may be restricted by student number or prerequisites

Not available to visiting or exchange students

BIO337 Biodiversity	
Credits: 10 Session: 2022/23 September-January	
Pre-requisite Modules:	
Co-requisite Modules:	
Lecturer(s): Dr JN Griffin	
Format:	15 Lectures drop in sessions Contact Hours will be delivered through a blend of live activities online and on-campus, and may include, for example, lectures, seminars, practical sessions and Academic Mentoring sessions.
Delivery Method: All Programmes will employ a blended approach to delivery using the Canvas Digital Learning Platform for live and self-directed online activity, with live and self-directed on-campus activities each week. Students may also have the opportunity to engage with online versions of sessions delivered on-campus	
Lectures	
Module Aims: Biodiversity (or biological diversity) is the 'variety of life' at all levels of organisation -- from genes to ecosystems. This module will explore the foundational and very latest research exploring spatial and temporal patterns of biodiversity, how biodiversity is related to the functioning of ecosystems, the growing extinction threat, and global strategies to conserve biodiversity.	
Module Content: This module will be largely lecture-based, with a directed reading component. The module will provide a detailed consideration of the complexity of the issue of biodiversity, its consequences for a functioning ecosystem and the wider implications for society and global systems. The major themes covered will include:	
The complex concept of Biodiversity will be carefully defined, and its various elements (from genes to ecosystems) discussed. Specific attention will be paid to the most commonly used measure of biodiversity -- the species unit.	
Spatial patterns in Biodiversity, from local to the global scale. Focus will be on describing and explaining the macro-scale patterns in biodiversity, including variation with latitude, altitude (terrestrial) and depth (marine).	
Changes in Biodiversity over deep geological time, from the origin of life to the present day. The causes and evolutionary consequences of the 'big five' past mass extinctions will be discussed.	
Human caused extinctions, including pre-historic extinctions, recent extinctions and projected species extinctions. These events will be placed in the context of the 'big five' to ask whether we are facing the '6th mass extinction'.	
Cutting-edge research addressing the possible consequences of extinctions for the structure and functioning of ecosystems. The links between various aspects of biodiversity (species, functional, phylogenetic) and various ecosystem functions (including stability) will be discussed. Furthermore, the possibility that primary species extinctions could cause cascades of secondary extinctions will be evaluated.	
Consideration of whether biodiversity is linked to ecosystem services. Although the link between whole ecological communities and valuable ecosystem services is well-established, whether biodiversity per se influences services remains a research frontier.	
Discussion on the various strategies being used to maintain (e.g. in situ and ex situ conservation) and store (e.g., seed banks) biodiversity and the controversial topic of de-extinction (bringing species back through synthetic biology).	
Intended Learning Outcomes: By the end of the module students will be able to:	
LO1) Define 'biodiversity' and explain its various dimensions.	
LO2) Describe and explain the main spatial and temporal patterns in biodiversity.	
LO3) Discuss the main drivers of modern biodiversity loss, and discuss why certain habitats and species are more vulnerable than others.	
LO4) Describe and explain the role of biodiversity in the functioning of ecosystems and provisioning of ecosystem services to humans.	
LO5) Discuss and critically evaluate strategies of conserving biodiversity, from genes to ecosystems.	
Assessment:	Coursework 2 (20%) Coursework 3 (40%) Coursework 1 (40%)

<p>Assessment Description: Coursework 1. Understanding biodiversity and the drivers of its loss. Three-part essay question, with each answer a maximum of 500 words (with references additional). The questions will cover: a) what is biodiversity and its various components and ways of measurement; and how is biodiversity distributed globally and across taxa; b) what are the main drivers of biodiversity loss, with examples; c) what are the patterns of biodiversity loss across taxonomic groups and according to species' traits?</p> <p>Coursework 2. Analysis of a biodiversity experiment. 1000 word report, including statistical analysis and figures. Skills: data handling, data analysis, data presentation, interpretation, critical analysis/thinking to place in broader context</p> <p>Coursework 3. Understanding biodiversity and ecosystem functioning in the real world and its connections to people Three-part essay question. Biodiversity – stability relationships; b) biodiversity – functioning across heterogeneous real world ecosystems; c) biodiversity, services, human wellbeing. 500 words for each part.</p>
<p>Moderation approach to main assessment: Second marking as sampling or moderation</p>
<p>Assessment Feedback: Final year exams will not have formal feedback provided.</p>
<p>Failure Redemption: As a level 3 module all marks are recorded in final year examination, there are no re-sits. Year 3 modules can be failed down to zero. August deferrals can be provided under extenuating circumstances.</p>
<p>Additional Notes: Delivery of both teaching and assessment will be blended including live and self-directed activities online and on-campus.</p> <p>All modules are subject to staff availability and may be restricted by student number or prerequisites. Normally available to elective, visiting or exchange students. Please note that any failures are non-redeemable, there are no resits for Year 3 modules</p>

BIO338 Polar Biology

Credits: 10 Session: 2022/23 January-June

Pre-requisite Modules:

Co-requisite Modules:

Lecturer(s): Prof KW Tang

Format: Lectures = 13 hours; Paper discussions = 4 hours; Drop-in sessions = 2 hours; Review session = 1 hour
Contact Hours will be delivered through a blend of live activities online and on-campus, and may include, for example, lectures, seminars, practical sessions and Academic Mentoring sessions.

Delivery Method: All Programmes will employ a blended approach to delivery using the Canvas Digital Learning Platform for live and self-directed online activity, with live and self-directed on-campus activities each week. Students may also have the opportunity to engage with online versions of sessions delivered on-campus

Lectures, paper discussions, drop-in meetings

Module Aims: This module considers the ecology of the polar region. Topics are organised into six themes: 1) History of polar exploration; 2) Characteristics of the environments; 3) Major wildlife; 4) Adaptation strategies; 5) Ecosystem dynamics; 6) Changes and threats. Lectures will be complemented by paper discussions.

Module Content: The module is organised around six main themes:

1. The history: Heroic age of polar exploration; Modern-day polar exploration and research
2. The environment: Geological formation of the polar oceans; Environmental conditions; Sea ice and deep water formation; Dry Valleys, subglacial lakes, fjords, tundra
3. The wildlife: Polar vertebrates and their evolutionary history; Krill and zooplankton migration; Vegetation; Biodiversity pattern
4. Adaptations: The challenges of living in the polar regions; Concept of Q10 and the basics of thermal biology; Different ways to deal with cold temperature; Adaptations by vegetation
5. The ecosystem: Phytoplankton and primary production; Iron limitation and ocean fertilisation; Biological pump; Sea ice dynamics and biological production; The importance of krill; Antarctic vs. Arctic marine food web
6. Changes and threats: Ozone depletion & UV exposure; Fishing and hunting pressure; Pollution; Climate change; Other disturbances

Lectures will be complemented by paper discussions. Extensive extra directed reading is expected.

Intended Learning Outcomes: At the end of this module the students will:

- LO1) Demonstrate an appreciation of the extreme environmental conditions in the polar region
- LO2) Be able to compare and contrast wildlife in polar regions and those in lower latitudes
- LO3) Be able to describe strategies used by organisms to adapt to the polar environment
- LO4) Demonstrate detailed understanding of food web structure and dynamics in the polar oceans
- LO5) Be able to describe recent changes and threats to the polar ecosystems

Assessment: Examination (40%)
Coursework 1 (5%)
Coursework 2 (10%)
Coursework 3 (5%)
Coursework 4 (40%)

Assessment Description: EXAM: Essay question (40%)

FINAL COURSEWORK: Directed reading question (40%)

CONTINUOUS COURSEWORK (20%)

- 5% assignment 1
- 10% assignment 2
- 5% assignment 3

Moderation approach to main assessment: Universal non-blind double marking

Assessment Feedback: Individual formative verbal feedback during drop-in sessions; written feedback on writing assignments and exam scripts.

Failure Redemption: As a Level 3 module, there are no re-sits or alternative course works. Year 3 modules can be failed down to zero. August deferrals can be provided under extenuating circumstances.

Additional Notes: Delivery of both teaching and assessment will be blended including live and self-directed activities online and on-campus.

All modules are subject to staff availability and may be restricted by student number or prerequisites

Normally available to elective, visiting or exchange students. Please note that any failures are non-redeemable, there are no resits for Year 3 modules

BIO341 Plant Conservation and Ecology

Credits: 10 Session: 2022/23 September-January

Pre-requisite Modules: BIO103

Co-requisite Modules:

Lecturer(s): Dr AP Devine

Format: 12 Lectures (12 hrs), 2 Practicals (8 hrs), 2 help sessions (2 hr). Contact Hours will be delivered through a blend of online and on campus, and may include, for example, lectures, seminars, practical sessions and Academic Mentoring sessions.

Delivery Method: All Programmes will employ a blended approach to delivery using the Canvas Digital Learning Platform for live and self-directed online activity, with live and self-directed on-campus activities each week. Students may also have the opportunity to engage with online versions of sessions delivered on-campus

A mixture of lectures, practicals and interactive discussions

Module Aims: "Without plants, there is no life. The functioning of the planet, and our survival, depends on plants." (Global Plant Conservation strategy 2012). This module gives an overview of the importance of plant communities to conservation goals and the threats to plant habitats. We will explore core concepts of conservation biology, examining both in-situ and ex-situ conservation and discuss global conservation policies and conventions. Students will also have the opportunity to conduct their own plant conservation assessments in line with the IUCN framework.

Module Content: This module will be taught with a mixture of lectures, practicals and interactive discussions, the syllabus will be split into four major themes:

- 1) Threats to plants and the need for conservation
 - Threats to ecosystems, plant species and habitats
 - The importance of plants an ecosystem services approach
 - Conservation conventions, polices and bodies
- 2) Practical conservation assessment
 - IUCN conservation assessment
 - Plant conservation in practice
 - Concepts in population biology
- 3) Concepts in conservation biology for in-situ plant conservation
 - Population biology
 - Reserve design
 - Habitat fragmentation
 - Edge effect
 - Allee effect
 - Future challenges in plant conservation
- 4) Concepts in conservation biology for ex-situ plant conservation
 - Genetic diversity
 - Seedbanks
 - Propagation
 - Micropropagation
 - Botanical gardens

Intended Learning Outcomes: At the end of the module students will be able to

LO1) Describe the threats facing ecosystems and plant communities and current conservation polices and conventions.

LO2) Discuss and critically evaluate biological and ecological concepts related to plant conservation, including both in-situ and ex-situ conservation applications

LO3) Conduct a conservation assessment for an individual plant species (computer based practical), deciding the conservation status of a species and critically evaluating the reliability of the assessment outcome.

LO4) Critically analyse conservation strategies in regards to long-term success, applying biological concepts from gene to ecosystem.

LO5) Discuss and evaluate the future challenges that plant species and communities face and how conservation can be used to mitigate these future impacts.

Assessment: Coursework 1 (30%)
Coursework 2 (70%)

Assessment Description: Coursework 1 - Assignment (30%)

- IUCN practical assessment

Coursework 2 - Assignment (70%)

- Plant conservation report

Moderation approach to main assessment: Second marking as sampling or moderation

Assessment Feedback: Written feedback on assignment and verbal where appropriate.

Failure Redemption: As a Year 3 module all marks are recorded in final year examination, there are usually no re-sits options. However when appropriate a supplementary re-sit exam will be made available.

Additional Notes: Delivery of both teaching and assessment will be blended including live and self-directed activities online and on-campus.

All modules are subject to staff availability and may be restricted by student number or prerequisites

It is strongly recommended that students who are interested in taking this module have also completed the BIO232 Plant ecology module, however it is not a formal pre-requisite.

Normally available to elective, visiting or exchange students. Please note that any failures are non-redeemable, there are no resits for Year 3 modules.

GEC331 Traethawd Estynedig Daearyddiaeth

Credits: 30 Session: 2022/23 September-June

Pre-requisite Modules: GEC277; GEC278; GEG277; GEG278

Co-requisite Modules:

Lecturer(s): Prof NJ Loader, Dr OH Elias, Dr RH Meara

Format: Cymorth unigol gan staff gan gynnwys allbwn ar adroddiadau paratoadol. Sesiwnau cefnogi (ar lein) Contact Hours will be delivered through a blend of live activities online and on-campus, and may include, for example, lectures, seminars, practical sessions and Academic Mentoring sessions.

Delivery Method: All Programmes will employ a blended approach to delivery using the Canvas Digital Learning Platform for live and self-directed online activity, with live and self-directed on-campus activities each week. Students may also have the opportunity to engage with online versions of sessions delivered on-campus

Newid y ffordd y cyflwynir modiwlau i gyflwyno cydamserol ar-lein. Gall y dewis pwnc ar gyfer Traethawd Estynedig gael ei gyfyngu oherwydd cyfyngiadau pandemig Covid-19 (h.y. dewis cyfyngedig o ran pwnc/dull, defnyddio data eilaidd ayyb.). Cyflwynir y traethawd estynedig cyfan yn electronig

Change in delivery of module to on-line synchronous. Choice of Dissertation topic may be limited by covid-19 restrictions (i.e. restricted choice of topic/method, use of secondary data etc.). Complete dissertation to be submitted electronically.

Module Aims: Mae'r traethawd estynedig yn adroddiad 10,000 o eiriau (mwyafswm) ar brosiect ymchwil gwreiddiol, sylweddol ac annibynol ar agwedd o Ddaearyddiaeth. Mae fel arfer yn seiliedig ar o amgylch 20-25 diwrnod o waith ymchwil sylfaenol (primary research) a sawl wythnos o waith analeiddio ac ysgrifennu. Mae'r traethawd estynedig yn cynnig y cyfle i chi i ddilyn eich diddordebau personol ac i arddangos eich galluoedd fel Daearyddwr. Yn ystod hynt y traethawd estynedig fe'ch cefnogir gan grwp cefnogaeth/trafodaeth sy'n cael ei arwain gan fyfyrwyr, a byd ganddoch hefyd aelod o staff fel arolygydd. Byddwch yn cynnig beirniadaeth adeiladol i gyd-fyfyrwyr sy'n ymgymryd a phrosiectau ymchwil cysylltiedig, gan ddysgu o'u profiadau, problemau a'u datrysiadau hwy. Mae'r gefnogaeth ac arolygaeth yma yn cael ei ddarparu drwy fodiwl "Dissertation Support" (GEG332) sydd yn fodiwl cyd-ofynedig.

Module Content: Mae'r traethawd estynedig yn adroddiad 10,000 o eiriau (mwyafswm) ar brosiect ymchwil gwreiddiol, sylweddol ac annibynol ar agwedd o Ddaearyddiaeth. Mae fel arfer yn seiliedig ar o amgylch 20-25 diwrnod o waith ymchwil sylfaenol (primary research) a sawl wythnos o waith analeiddio ac ysgrifennu. Mae'r traethawd estynedig yn cynnig y cyfle i chi i ddilyn eich diddordebau personol ac i arddangos eich galluoedd fel Daearyddwr. Yn ystod hynt y traethawd estynedig fe'ch cefnogir gan grwp cefnogaeth/trafodaeth sy'n cael ei arwain gan fyfyrwyr, a byd ganddoch hefyd aelod o staff fel arolygydd. Byddwch yn cynnig beirniadaeth adeiladol i gyd-fyfyrwyr sy'n ymgymryd a phrosiectau ymchwil cysylltiedig, gan ddysgu o'u profiadau, problemau a'u datrysiadau hwy. Mae'r gefnogaeth ac arolygaeth yma yn cael ei ddarparu drwy fodiwl "Dissertation Support" (GEG332) sydd yn fodiwl cyd-ofynedig.

Intended Learning Outcomes: Ar ddiwedd y modiwl yma, fe ddylai'r myfyriwr allu:

- Arolygu'r lenyddiaeth wyddonol, gan wneud defnydd o gonfeydd data electroneg lle'n berthnasol;
- Ymchwilio a deall oblygiadau rheolau priodol Iechyd a Diogelwch;
- Cyflawni rhaglen ymchwil priodol yn ofalus;
- Cadw cofnodion ymchwil yn ystod gwaith maes, archifol, cyfrifiadurol, neu labordy;
- Integreiddio deunydd o'r llenyddiaeth gyda canlyniadau a'u crewyd drwy ymchwil;
- Gweithio yn annibynol i gwblhau adroddiad ymchwil sylweddol.

Assessment: Project (100%)

Assessment Description: Traethawd estynedig 10,000 o eiriau.

Moderation approach to main assessment: Universal double-blind marking

Assessment Feedback: Rhoddir adborth ar elfennau paratoadol y traethawd estynedig, gan gynnwys adroddiad interim sylweddol a'i gyflwynir ar ddechrau mis Rhagfyr.

Failure Redemption: Ail-gyflwyno traethawd estynedig - naill ai ar y testun gwreiddiol neu un newydd - yn y cyfnod ail-eistedd.

Additional Notes: Delivery of both teaching and assessment will be blended including live and self-directed activities online and on-campus.

Ddim ar gael i fyfyrwyr cyfnewid a rhai ar ymweliad. Competence in written and spoken Welsh is essential for this module.

GEC332 Cefnogaeth Traethawd Hir

Credits: 10 Session: 2022/23 September-June

Pre-requisite Modules: GEC277; GEC278; GEG277; GEG278

Co-requisite Modules: gec331

Lecturer(s): Prof NJ Loader, Dr RH Meara

Format: Tiwtorialau grwp ac unigol

Group tutorials and one-to-one meetings. (Online delivery due to covid-19 restrictions).
Contact Hours will be delivered through a blend of live activities online and on-campus, and may include, for example, lectures, seminars, practical sessions and Academic Mentoring sessions.

Delivery Method: All Programmes will employ a blended approach to delivery using the Canvas Digital Learning Platform for live and self-directed online activity, with live and self-directed on-campus activities each week. Students may also have the opportunity to engage with online versions of sessions delivered on-campus

Ar campws/ar lein

On campus/online

Module Aims: Mae'r modiwl yma yn cynnig strwythur, trwy gefnogaeth grwp-cyfoedion dan arweiniad myfyrwyr a goruchwyllo gan staff academiaidd, i fyfyrwyr sy'n dilyn y modiwl 30 credid 'Traethawd Estynedig Daearyddiaeth'. Caiff y broses cefnogaeth a goruchwyllo yma ei hasesu trwy gyflwyniad crynodeb fideo yn (CD1), a chyflwyniad Amlinelliad y Traethawd hir (Dissertation Outline) yn CD2. Trwy weithio o fewn grwp-cyfoedion dan arweiniad, cewch gyfle i gynnig beirniadaeth gefnogol i fyfyrwyr eraill sy'n ymgymryd mewn prosiectau ymchwil perthnasol, a dysgu o'u profiadau ymchwil a strategaethau datrys nhw. Mae'r modiwl yma yn cyd-fynd a'r 'Traethawd Estynedig Daearyddiaeth' a rhaid cymryd y ddau fodiwl ar y cyd.

(This module provides structured, student-led peer-group support and academic staff group supervision for students undertaking the 30-credit 'Dissertation Report: Geography' module. This support and supervision is assessed through the submission of a Video abstract in TB1 and the submission in TB2 of a Dissertation Outline. Working within a supervised Student Peer Group, you will also have the opportunity to provide constructive criticism to fellow students undertaking related research projects, learning from their research problems and subsequent solutions. This module complements the 'Dissertation Report: Geography' module, which is a co-requisite.)

Module Content: Amlinelliad awgrymiadol o strwythur y gefnogaeth:

Wythnos 1: Sesiwn cyfarwyddol a chyflwyniad i'r modiwl
Wythnos 2: Cyfarfod Grp Cyfoedion Traethawd estynedig
Wythnos 3: Cyfarfod grp gyda goruchwyliwr
Wythnos 5: Cyfarfod Grp Cyfoedion Traethawd estynedig
Wythnos 6: Cyfarfod grp gyda goruchwyliwr
Wythnos 8: Cyfarfod Grp Cyfoedion Traethawd estynedig
Wythnos 9: Cyfarfod grp gyda goruchwyliwr, a derbyn adborth ar y posteri.
Wythnos 10 - cyflwyno amlinelliad o'r traethawd estynedig
Wythnos 11: Cyfarfod unigol gyda goruchwyliwr
Wythnos 12: Cyfarfod Grp Cyfoedion Traethawd estynedig
Wythnos 13: Cyfarfod grp gyda goruchwyliwr
Wythnos 15: Cyfarfod Grp Cyfoedion Traethawd estynedig
Wythnos 16: Cyfarfod unigol gyda goruchwyliwr (trafod copi drafft o'r traethawd estynedig)
Wythnos 18: Cyflwyno munudau a nodiadau'r cyfarfodydd cyfoedion a goruchwyliwr.
Wythnos 21: Cyflwyniad poster PowerPoint

DISGRIFIAD:

Mae'r modiwl yma yn cynnig strwythur trwy gefnogaeth grwp-cyfoedion dan arweiniad myfyrwyr a goruchwylio gan staff academiaidd, i fyfyrwyr sy'n dilyn y modiwl 30 credid 'Traethawd Estynedig Daearyddiaeth'. Caiff y broses cefnogaeth a goruchwylio yma ei hasesu trwy gyflwyniad: CD1; Poster PowerPoint/Abstract-Fideo. CD2; Amlinelliad manwl o'r traethawd hir.

Trwy weithio o fewn grwp-cyfoedion dan arweiniad, cewch gyfle i gynnig beirniadaeth gefnogol i fyfyrwyr eraill sy'n ymgymryd mewn prosiectau ymchwil perthnasol, a dysgu o'u profiadau ymchwil a strategaethau datrys nhw. Mae'r modiwl yma yn cyd-fynd a'r 'Traethawd Estynedig Daearyddiaeth' a rhaid cymryd y ddau fodiwl ar y cyd.

(Indicative structure of support:

Week 1: Briefing
Week 2: Dissertation Peer Group Meeting
Week 3: Group meeting with supervisor
Week 5: Dissertation Peer Group Meeting
Group meeting with supervisor
Week 7: PowerPoint poster submission
Week 8: Dissertation Peer Group Meeting
Week 9: Group meeting with supervisor, with feedback on posters
Week 12: Dissertation Peer Group Meeting
Week 13: Group meeting with supervisor
Week 15: Dissertation Peer Group Meeting
Week 18: Dissertation and peer and supervisor meeting minutes submission

DESCRIPTION

This module provides structured, student-led peer-group support and academic staff group supervision for students undertaking the 30-credit 'Dissertation Report: Geography' module. This support and supervision is assessed through the submission of:

a Powerpoint Poster/Video abstract in TB1; Dissertation Outline in TB2.

The 'Dissertation Report: Geography' and 'Dissertation Support - Geography' modules are co-requisites.)

Intended Learning Outcomes: Erbyn diwedd y modiwl yma bydd y myfyriwr yn medru:

- Adolygu'r llenyddiaeth wyddonol, gan wneud defnydd o gronfeydd data digidol lle'n briodol.
- Ymchwilio a deall goblygiadau mesurau a deddfwriaeth iechyd a diogelwch addas
- Gweithredu rhaglen ymchwil ystyrlon
- Cyfuno deunydd o'r llenyddiaeth gyda chanlyniadau sy'n deillio o ymchwil
- Gweithio fel rhan o dîm sy'n cynnig cyngor beirniadol a chefnogol i fyfyrwyr eraill.

(At the end of this module the student should be able to:

- * Survey the scientific literature, making use of electronic databases where appropriate
- * Research and understand the implications of appropriate health and safety legislation
- * Execute a careful research program
- * Keep research records during field, computer or lab work
- * Integrate material from the literature with results obtained from research
- * Work in a team providing critical and supporting advice to other students)

Assessment: Assignment 1 (50%)
Assignment 2 (50%)

Assessment Description: Cyflwynir tiwtorialau yn unol â'r amserlen, y tiwtor fydd yn penderfynu ar y dull cyflwyno.

Asesiad Semester 1. Cyflwyniad 5 munud ar ymchwil dylunio a dulliau trwy fideo/a recordiwyd

Asesiad Semester 2: Asesiad Ysgrifenedig – Amlinelliad o'r Traethawd Estynedig

Dylai amlinelliad y traethawd estynedig fod ar ffurf rhestr gynnwys sy'n cynnwys teitlau penodau ac is-benawdau penodau ynghyd â disgrifiad o'r hyn y bydd y traethawd estynedig yn ei gynnwys o dan bob is-adran. Dylid anelu at gynnwys canlyniadau a chasgliadau cychwynnol.

Assessment Semester 1. 5 min. Video/recorded presentation on research design and methods

Assessment Semester 2: Written assessment – Dissertation Outline

The dissertation outline should take the form of a contents list comprising of chapter titles and chapter sub-headings with description of what the dissertation will include within each sub-section. It should aim to include at least preliminary results and conclusions.

Moderation approach to main assessment: Second marking as sampling or moderation

Assessment Feedback: Feedback through online tutorial system and in written form via University feedback sheets.

Failure Redemption: Nid oes modd achub methiant ar Lefel 3. Failure is non redeemable at Level 3.

Additional Notes: Delivery of both teaching and assessment will be blended including live and self-directed activities online and on-campus.

Dim ar gael i fyfyrwyr dethol o bynciau arall, myfyrwyr sy'n ymweld, na myfyrwyr ar gynllun cyfnewid.

Not available to elective, visiting or exchange students

GEG329 Animating Migration Theory

Credits: 20 Session: 2022/23 September-January

Pre-requisite Modules:

Co-requisite Modules:

Lecturer(s): Prof SV Shubin

Format: 30 hrs interactive seminars
11 hrs lectures (including Q&A sessions)

Contact Hours will be delivered through a blend of live activities online and on-campus, and may include, for example, lectures, seminars, practical sessions and Academic Mentoring sessions.

Delivery Method: All Programmes will employ a blended approach to delivery using the Canvas Digital Learning Platform for live and self-directed online activity, with live and self-directed on-campus activities each week. Students may also have the opportunity to engage with online versions of sessions delivered on-campus

This course will utilise interactive learning and teaching strategies and sessions will be conducted as lectures and two-hour seminars in 'workshop style' around particular themes. Students will be expected to take part in group discussion and exercises. The course tutor will give an introduction at the start of each session to the major themes and questions to be addressed during the session, and will be involved in the group exercises.

- Seminars are absolutely central to the learning experience at this level and attendance is compulsory. If you know in advance that circumstances beyond your control will prevent you from attending a seminar, you should contact the tutor as soon as possible to explain your absence.
- Each student must prepare for every seminar. It is essential that you come to seminars having engaged in some preliminary reading, and having acquainted yourself with the main issues covered by the topic. The seminars are designed to build on your preliminary reading, clarify issues and concepts, and engagement in debate and discussion. The seminars, as well as the learning outcomes of the course, depend fully on every student preparing appropriately for each session.
- Students are expected to read widely for the seminar, participate fully in seminar discussions, and fulfil the formal assessment requirements.
- Each student is expected to participate in leading at least one seminar (student presentation). This involves participating in formal debates that require prior preparation.

Module Aims: The phenomenon of international migration continues to challenge global society on the levels of international politics, law and human rights, social and population policies. As a phenomenon underpinned by fluidity and radical difference, migration always escapes simple modes of representation and reductive theorisations. Indeed, as the dramatic events of the last decade have demonstrated, migration regularly takes shape around new scenarios, follows unpredictable routes and often involves migrant lives that exceed the expectations, representations and restrictions of mainstream migration studies and policy orthodoxies. The course introduces students to the major debates surrounding contemporary migration and aims to foster a sophisticated understanding of the relationship between migration and global structures, governance, development, state, space and time.

Module Content: Lectures and seminars will be based on the following Syllabus themes:

1 Introduction to migration theories

Course and topic introduction.

2 Migrant subjectivity

The purpose of this session is to draw attention to recent conceptual developments in migration studies and cultural geography that challenge the existence of relatively coherent identities and instead offer more fluid notions of subjectivity.

3 Naming, territorialising, representing migrations

This topic raises questions about representations of migrants. It explores how language is often used to name and territorialise migration, cutting up itinerant lives along the thresholds of mobility/settlement, home/not home. It discusses the effects of using devices of power and overcoding by the state in allocating specific places to migrants, regulating their relationships and measuring their lives according to their emplacement.

4 Space and place in migration

This subject provides wider accounts of space and place in migration. The discussion in this session is premised on the assumption that mobile being in the world cannot be limited to measurable and orderable dimensions of life. Instead, it emphasises experiential and dynamic character of migrant lives and the manner in which they are embroiled in the assembly and transformation of space and place.

5 Temporalities of migration

The purpose of this section is to consider migration as a mode of being in the world and to uncover the complexity and dynamic nature of mobile lifestyles that are often overlooked in the regulations of migration in the areas of law, planning and social policies. It considers how migration unfolds in a constant dialogue between different times, spaces and identities, which highlight the relational nature of migrant forms of travel and belonging.

6 Forces producing migration

The purpose of this section is to consider the diversity of forces involved in generating mobility and the networked patterning of lives that sustains migration. It addresses in particular the manner in which social theory can assist in advancing scholarly accounts of the drivers of migration and their linkages into notions of aspiration and desire.

7 Materialities of migration

This session examines the materiality of migration and migrant lives, examining the role of objects, material forms and representations as dimensions of mobility and immobility that link into and extend the theoretical concerns addressed in earlier seminars. This discussion recognizes the diversity of ways in which the material and immaterial are articulated into the possibilities, constraints on and effects of migration.

8 Summary and conclusion

This part of the syllabus will revisit theoretical perspectives and analytical frameworks studied during the course and discuss opportunities to incorporate a sensitivity to and ability to account for diversity (socio-cultural, socio-economic, spatial, geographical) in the relationship between migration, security and settlement. We will consider global migration futures and summarise the material discussed in this course.

Intended Learning Outcomes: On completion of this unit, successful students will be able to:

- a) Illustrate a broad understanding of major conceptual approaches to the study of international migration;
- b) Show advanced written and verbal evidence of a holistic and multi-dimensional conceptual approach to migration that is reflective of social change;
- c) Display the ability to use theoretical analysis and case studies to debate key issues in global migration theory;
- d) Display the development of strong analytical, critical and writing skills through portfolio and essay writing;

Assessment:	Presentation (30%) Coursework 1 (70%)
Resit Assessment:	Examination (Resit instrument) (100%)
Assessment Description:	Student Presentation individual, 5 minutes each, on the list of pre-defined topics Presentation format (narrated slideshow) proved successful, effective and adaptable during the uncertain and changeable period of teaching during the pandemic (under changing regulations). Each student will provide a pre-recorded presentation (Nicole Chartier, CAS will provide online training for the students).
Essay	Students will write an essay on the same topic they chose for their presentation. Feedback from the essay will be used to highlight the points for potential improvement and will be incorporated into student's work on the essay.
Moderation approach to main assessment:	Second marking as sampling or moderation
Assessment Feedback:	Assessment on this course will be both formative and summative. Formative feedback will be provided in terms of frequent opportunities for informal discussion between the tutor and students, as well as feedback on performance where relevant. Summative assessment will be divided between (a) one 1500 word essay, and (b) a seminar presentation. Detailed, individual feedback on summative work will be provided in line with marking criteria.
Failure Redemption:	Through an exam paper submitted during the resit period.
Additional Notes:	Delivery of both teaching and assessment will be blended including live and self-directed activities online and on-campus.
This module is open to visiting and exchange students.	

GEG331 Dissertation Report: Geography

Credits: 30 Session: 2022/23 September-June

Pre-requisite Modules:

Co-requisite Modules:

Lecturer(s): Prof NJ Loader, Prof SH Doerr, Dr NJ Felstead, Dr KH Halfacree, Dr JF Maddern, Dr RH Meara, Prof T Murray, Prof PRJ North, Dr AL Pigott, Dr KJ Preece, Dr I Robertson, Prof SV Shubin, Dr E Urbanek

Format: Dissertation support - Geography
Delivery subject to covid-19 restrictions).
Contact Hours will be delivered through a blend of live activities online and on-campus, and may include, for example, lectures, seminars, practical sessions and Academic Mentoring sessions.

Delivery Method: All Programmes will employ a blended approach to delivery using the Canvas Digital Learning Platform for live and self-directed online activity, with live and self-directed on-campus activities each week. Students may also have the opportunity to engage with online versions of sessions delivered on-campus

Synchronous online delivery / on campus - delivery mode subject to covid-19 restrictions.

Module Aims: The dissertation is an original, substantive and independent research project in an aspect of Geography. It is typically based on approximately 20 - 25 days of primary research and several weeks of analysis and write-up. The end result must be less than 7,500 words of text. The dissertation offers you the chance to follow your personal interests and to demonstrate your capabilities as a Geographer. During the course of your dissertation you will be supported by a student-led discussion group and a staff supervisor, and you will also provide constructive criticism to fellow students undertaking related research projects, learning from their research problems and subsequent solutions. This support and supervision is delivered through the 'Dissertation Support' module, which is a co-requisite.

Module Content: The dissertation is an original, substantive, and independent research project focused on an aspect of Geography that is supervised by one or more appropriate members of academic staff. The dissertation is presented as a 7,500 word (maximum) report and supported through peer and supervisor meetings provided through the 'Dissertation Support' module. These two modules are co-requisites.

Intended Learning Outcomes: At the end of this module the student should be able to:

- Survey the scientific literature, making use of electronic databases where appropriate
- Research and understand the implications of appropriate health and safety legislation
- Execute a careful research program
- Keep research records during field, computer or lab work
- Integrate material from the literature with results obtained from research
- Work independently producing substantial research report

Assessment: Project (100%)

Assessment Description: Submission of original dissertation, 7,500 words (max).

Moderation approach to main assessment: Universal double-blind marking

Assessment Feedback: Continual assessment feedback in writing on standard department feedback forms

Failure Redemption: Failure is non-redeemable in level 3

Additional Notes: Not normally available to visiting and exchange students

GEG332 Dissertation Support: Geography	
Credits: 10 Session: 2022/23 September-June	
Pre-requisite Modules:	
Co-requisite Modules:	
Lecturer(s): Prof NJ Loader, Prof SH Doerr, Dr NJ Felstead, Dr KH Halfacree, Dr JF Maddern, Dr RH Meara, Prof T Murray, Prof PRJ North, Dr AL Pigott, Dr KJ Preece, Dr I Robertson, Prof SV Shubin, Dr E Urbanek	
Format:	7 (online delivery subject to covid-19 restrictions) Contact Hours will be delivered through a blend of live activities online and on-campus, and may include, for example, lectures, seminars, practical sessions and Academic Mentoring sessions.
Delivery Method: All Programmes will employ a blended approach to delivery using the Canvas Digital Learning Platform for live and self-directed online activity, with live and self-directed on-campus activities each week. Students may also have the opportunity to engage with online versions of sessions delivered on-campus	
Tutorials delivered as per timetable, method of delivery remains the choice of the tutor.	
Module Aims: This module provides structured, student-led peer-group support and academic staff group supervision for students undertaking the 30-credit 'Dissertation Report: Geography' module. This support and supervision is assessed through the submission of a PowerPoint Poster in TB1 and the submission outline in TB2. Working within a supervised Student Peer Group, you will also have the opportunity to provide constructive criticism to fellow students undertaking related research projects, learning from their research problems and subsequent solutions. This module complements the 'Dissertation Report: Geography' module, which is a co-requisite.	
Module Content: Indicative structure of support:	
<p>Week 1: Briefing</p> <p>Week 2: Dissertation Peer Group Meeting</p> <p>Week 3: Group meeting with supervisor</p> <p>Week 5: Dissertation Peer Group Meeting</p> <p>Group meeting with supervisor</p> <p>Week 7: PowerPoint poster submission</p> <p>Week 8: Dissertation Peer Group Meeting</p> <p>Week 9: Group meeting with supervisor, with feedback on posters</p> <p>Week 12: Dissertation Peer Group Meeting</p> <p>Week 13: Group meeting with supervisor</p> <p>Week 15: Dissertation Peer Group Meeting</p> <p>Week 18: Dissertation and peer and supervisor meeting minutes submission</p> <p>Attendance at all group meetings is compulsory.</p> <p>.</p> <p>DESCRIPTION</p> <p>This module provides structured, student-led peer-group support and academic staff group supervision for students undertaking the 30-credit 'Dissertation Report: Geography' module. This support and supervision is assessed through the submission of a PowerPoint Poster in TB1, and the submission in TB2 of a dissertation outline. The 'Dissertation Report: Geography' and 'Dissertation Support - Geography' modules are co-requisites.</p>	
Intended Learning Outcomes: At the end of this module the student should be able to:	
<ul style="list-style-type: none"> * Survey the scientific literature, making use of electronic databases where appropriate * Research and understand the implications of appropriate health and safety legislation * Execute a careful research program * Keep research records during field, computer or lab work * Integrate material from the literature with results obtained from research * Work in a team providing critical and supporting advice to other students 	
Assessment:	Assignment 1 (50%) Assignment 2 (50%)

Assessment Description: Coursework comprises of two elements:

Assessment Semester 1. 5 min. Video/recorded presentation on research design and methods

Assessment Semester 2: Written assessment – Dissertation Outline

The dissertation outline should take the form of a contents list comprising of chapter titles and chapter sub-headings with description of what the dissertation will include within each sub-section. It should aim to include at least preliminary results and conclusions.

Moderation approach to main assessment: Universal double-blind marking

Assessment Feedback: Continual assessment feedback in writing on standard department feedback forms

Failure Redemption: Failure is non-redeemable in level 3

Additional Notes: Not available to elective, visiting or exchange students.

GEG337 Wildfires

Credits: 20 Session: 2022/23 September-January

Pre-requisite Modules:

Co-requisite Modules:

Lecturer(s): Prof SH Doerr

Format: As lectures, seminars and Q&A sessions (face to face or online, as appropriate) with the potential of a half-day field trip (subject to any future CV-19 restrictions)

Delivery Method: The module will be delivered through a blend of activities, and may include, for example, lectures, seminars, practical sessions and Academic Mentoring sessions (face to face or online, as appropriate) with the potential of a half day field trip (subject to any future CV-19 restrictions)

Module Aims: Wildfires are a natural phenomenon in the Earth System that has shaped the landscapes and ecology of a wide range of Earth's biomes for many millions of years. They currently burn 3–5 million km² of the Earth's surface annually (around 12–20 x the size of the UK). Wildfires (i.e. uncontrolled fires) and managed vegetation fires emit around 8 billion tonnes of CO₂ to the atmosphere on average each year, with some of these emissions contributing to climate change, but most of them being sequestered again during vegetation recovery. Many fires are an essential driver of maintaining ecosystems whether ignited naturally by lightning or humans as land management tool, and do not present an immediate risk to society or the environment. However, some fires lead to loss of life or infrastructures and can also threaten ecosystems that are not adapted to fire or in which fire regimes are altered by human influence. Fire impacts on society extend beyond direct destruction, such as accelerated soil erosion and water contamination, or exposure to smoke contributing to over 300,000 premature deaths per year. Major fire outbreaks in recent years have received extensive media attention and fuelled concern that climate change is increasing fire activity, threatening human livelihood, destroying ecosystems and accelerating climate change. These conflicting roles of fire pose a huge challenge: how do we balance the natural role of vegetation fires on Earth with the need to protect life and infrastructure?

This module will provide an multifaceted overview of vegetation fires and its role in maintaining ecosystems, how fire is ignited, how climate change, land management, weather and fuel types interact to determine the nature and behaviour of fire, how fire directly and indirectly impacts the natural environment and societies, how the media and societies perceive fire, and how we can manage and co-exist with fire in our changing world.

Given the multidisciplinary nature of fire science, ranging from physical principles to ecology and socio-economic and political dimensions, no textbook exists that covers all these comprehensively. The module thus will use a few textbooks, but also requires engaging critically with the latest scientific literature. It particularly suited to students who focus on physical geography, but it also offers insights and skills relevant to cultural, social and economic geography, and other disciplines.

Module Content: • Fire principles (combustion and fire behaviour)

- Fire as a factor shaping ecosystems through the Earth's history
- Fire in the tropics
- Fire in temperate and Mediterranean regions
- Fire in boreal and arctic regions
- Fire in the UK
- Direct environmental and social impacts of fire
- Indirect environmental and social impacts of fire
- Fire feedbacks with global climate change
- Temporal and regional trends in fire activities and their drivers
- Social 'fire': perceptions versus realities and the role of media
- Fire management, insurance, and policies
- Coexisting with fire: rethinking resilience to wildfire

The reading list field below does not work, hence reading list added here:

Fire on Earth – An Introduction, Andrew Scott et al. Wiley & Sons, 2014

Fire – A Very Short Introduction, Andrew Scott Oxford University Press, 2020

Most reading will be based on journal articles

<p>Intended Learning Outcomes: 1. Understanding the principles of fire, its ignition and behavior</p> <p>2. Understanding the co-evolution of fire with ecosystems and their adaption to fire (pyromes).</p> <p>3. Knowledge of the causes, temporal trends and impacts of fires in the Earth's major biomes.</p> <p>4. Understanding the complex interactions between climate, land use and societies in fire occurrence and behavior</p> <p>5. Skills in mapping and assessing the impacts of fires using commonly used modelling tools</p> <p>6. Understanding of the tools and associated benefits and drawbacks of modern fire suppression approaches</p> <p>7. Insights into the complexities of managing fire for conflicting purposes and in deriving fire policies</p> <p>8. Understanding of how science, media, policy and major industries affect perceptions and management of fire in the UK and a selection of major fire affected countries across the world</p>	
Assessment:	<p>Class Test 1 - Coursework (15%)</p> <p>Assignment 1 (25%)</p> <p>Briefing Paper (60%)</p>
<p>Assessment Description: Assessment 1 (online problem-based test) 15%</p> <p>Seminar presentation on modelling exercise 25%</p> <p>End of module report (policy briefing document) 60%</p>	
<p>Moderation approach to main assessment: Second marking as sampling or moderation</p>	
<p>Assessment Feedback: Students will receive feedback immediately after the online tests and individual written comments on coursework within 3 weeks of the submission deadline</p>	
<p>Failure Redemption: Failure is non-redeemable in level 3</p>	
<p>Additional Notes: Delivery of both teaching and assessment will be blended including live and self-directed activities online and on-campus.</p> <p>Normally available to elective, visiting or exchange students. Please note that any failures are redeemed during the August resit period, so you must ensure your availability.</p>	

GEG341 Contemporary Rural Britain

Credits: 20 Session: 2022/23 January-June

Pre-requisite Modules:

Co-requisite Modules:

Lecturer(s): Dr KH Halfacree

Format: 32 (30 lectures, 2 films)

Delivery Method: Lectures and film material; on campus

Module Aims: This module provides a comprehensive account of the human geography of present-day rural Britain. Substantive issues covered include: the rural economy, both agricultural and non-agricultural; population change in the countryside, especially migration; the development and impact of the town and country planning system in rural areas; the more specific issues of rural housing, accessibility and services, and their link to deprivation; the activities and effects of rural pressure groups; the variety of different groups and experiences found in the countryside, especially focusing on neglected groups; political debates over land use and control; the political structure of rural areas; and the idea that rural Britain is moving from 'productivism' to 'post-productivism'. The module is exclusively focused on Britain during the post-1945 period. It demonstrates that contemporary rural Britain does not conform to the timeless rustic idyll of Laura Ashley designs and chocolate box cottages but is an arena of dynamic change, conflict and compromise.

Module Content: Topics covered in the 2017-18 session (subject to change):

Imagination: What is Rural?

1. Defining rural

Rural Production

2. Agricultural change since 1945

3. Agriculture & the environment

4. Making a living on the farm

5. Non-agricultural employment

Rural Consumption

6. Migration & changing rural populations

7. Coursework 1 introduction & films

8. Deprivation, village services & housing

9. Neglected rural geographies

10. Contested rural leisure

Rural Regulation

11. The evolution of rural planning

12. Towards grass-roots rural planning? & Coursework 2 introduction

13. The politics of farming

14. The politics of housing development

Other Rurals

15. Radical ruralities

16. Global rurals, post-productivist countryside, post-Brexit rurality

Intended Learning Outcomes: At the end of this module the student should be able to:

- Outline a comprehensive knowledge and understanding of the socio-economic, political and cultural composition of rural Britain since 1945.
- Understand the importance of contrasting theoretical concepts and ideas for explaining these patterns and processes.
- Present an informed, contextualised and detailed account of the human geography of rural Britain today.
- Summarise both descriptive and more conceptual material concerning contemporary rural Britain in essay form.

Assessment: Examination 1 (50%)
Coursework 1 (25%)
Group Work - Project (25%)

Assessment Description: CW 1- Individual critical essay on rural representations
CW2 - Group project on dealing with a specific rural problem in a specific real-life location

Examination - 2 questions from choice of 6

Moderation approach to main assessment: Second marking as sampling or moderation

Assessment Feedback: Continual assessment feedback in writing on standard department feedback forms

Failure Redemption: Failure is non-redeemable in level 3

Additional Notes: Delivery of both teaching and assessment will be blended including live and self-directed activities online and on-campus.

Available to elective, visiting or exchange students. Although clearly a social science Human Geography module, it is accessible to those from other backgrounds.

GEG344 The Cryosphere in a Changing Climate

Credits: 20 Session: 2022/23 September-January

Pre-requisite Modules:

Co-requisite Modules:

Lecturer(s): Prof T Murray, Dr SL Cornford, Dr J Hiemstra, Prof B Kulesa, Prof AJ Luckman

Format: 32 (25 lecture + 7 presentation & discussion)

Contact Hours will be delivered through a blend of live activities online and on-campus, and may include, for example, lectures, seminars, practical sessions and Academic Mentoring sessions.

Delivery Method: All Programmes will employ a blended approach to delivery using the Canvas Digital Learning Platform for live and self-directed online activity, with live and self-directed on-campus activities each week. Students may also have the opportunity to engage with online versions of sessions delivered on-campus

On campus

Module Aims: This module will provide you with the scientific basis to understand the physical behaviour of glacier ice at spatial scales ranging from individual ice crystals to continental-scale glaciation. The module core topics will include glacier mass balance, transformation of snow to ice, glacier hydrology, dynamics, ice crystal structure and deformation, glacier sliding, deformation of glacial sediments, glacier flow instabilities and glacier surging. We will then introduce example topics of current research interest. You will have the opportunity to work in a small group on a guided research project. The module is assessed through an individual paper critique and “take-home” examination, as well as group presentation of your research project results at a poster-based mini-conference, and as a report. The research project work will normally be assigned a group mark, however, individual student’s marks may be moderated based on self and peer assessment.

Module Content: 1) Fundamentals of Glaciology, including mass balance, glacial dynamics, glacial hydrology and sedimentology, glacial geomorphology, Antarctic and Greenland ice sheets.

2) Approaches and Techniques in Glaciology, such as remote sensing, geophysics, computer modelling.

Intended Learning Outcomes: At the end of this module you will have knowledge and understanding of:

1. The physical processes controlling the behaviour of glaciers and ice sheets.
2. How glaciers and ice sheets interact with the landscape.
3. The 'practice of Glaciology': techniques used to investigate glacial systems.

At the end of this module you will be able to:

1. Discuss the key concepts of glacier and ice sheet behaviour
2. Evaluate state-of-the-science hypotheses in Glaciology
3. Appraise the usefulness of different approaches to problems in Glaciology

Assessment: Examination 1 (55%)
Coursework 1 (20%)
Group Work - Presentation (20%)
Coursework 2 (5%)

Assessment Description: Exam
Coursework 1 - Computer Worksheet
Group Presentation
Coursework 2 - contribution and engagement

Moderation approach to main assessment: Second marking as sampling or moderation

Assessment Feedback: Students will receive examination feedback after exams if taken in January. Continual assessment feedback is given in writing on standard departmental feedback forms.

Failure Redemption: Failure is non-redeemable in level 3

Additional Notes: Delivery of both teaching and assessment will be blended including live and self-directed activities online and on-campus.

This module has no pre- or co- requisites

GEG348 Plate Tectonics and Global Geophysics

Credits: 20 Session: 2022/23 January-June

Pre-requisite Modules:

Co-requisite Modules:

Lecturer(s): Prof B Kulesa

Format: 32

Contact Hours will be delivered through a blend of live activities online and on-campus, and may include, for example, lectures, seminars, practical sessions and Academic Mentoring sessions.

Delivery Method: All Programmes will employ a blended approach to delivery using the Canvas Digital Learning Platform for live and self-directed online activity, with live and self-directed on-campus activities each week. Students may also have the opportunity to engage with online versions of sessions delivered on-campus

Depending on exact 'new normal' situation in TB2, move to a combination of live lecture (in-person in an appropriate university teaching space that is also broadcast live online as well as recorded and made available to students on CANVAS), combined with online flipped learning and large-group learning activities that all emphasize active learning. The weighting of these activities will of course depend on 'new normal' situation but I could imagine a live lecture in above manner for 1x2 hrs per week, with 1x2 hrs per week of online flipped / large group / active learning. If live in-person lecture is not possible then have a small number of live online lectures for cohort building and providing instructions as well as feedback on assignments, and otherwise emphasize flipped / large group / active learning online.

Module Aims: Over the past century our view of the dynamic earth system has shifted from continental drift to sea floor spreading and, in the 1960s and 70s, to plate tectonics. However, given greatly improved observational data and mathematical models a new revolution has been initiated in the last decade: it turns out that many familiar concepts of plate tectonics may in fact be incorrect and outdated! This includes, for instance, what we thought were established concepts of mantle plumes, hot spots, evolving subduction zones and the plates' driving mechanisms. Consequently, a fully revamped plate dynamics framework is currently being drawn up and integrated into a whole-earth geodynamic model. This model views the earth's lithosphere, deeper mantle and core-mantle boundary as coupled entities that are considerably more complex than previously thought. This has fundamentally surprising and challenging, but at the time exciting and intellectually rewarding, consequences for the dynamics of the earth's lithospheric plates on which we live.

This module thus aims to attract open-minded students excited at the prospect of turning their view of the workings of our planet upside down, as challenged with the latest scientific hypotheses of the internal anatomy and dynamics of the earth; and indeed those of many planets in the solar system! The majority of up-to-date hypotheses and concepts will be new to the student, and are not covered by existing undergraduate textbooks. Successful completion of the module will thus require the ability and willingness to engage critically with the latest scientific literature, along with conscientious lecture attendance and continuous review of lecture materials.

Module Content: The birth of Earth and Moon

Seismology and Earth's global anatomy

Nothing happens without heat: Earth's heat engine

Divergent plate margins: where it all begins

Hot spots: plume model battles plate model

Gravity: attractive but wobbly earth

Anatomy and evolution of passive and convergent plate margins

Geomagnetism and geoelectricity: high-voltage earth

Plate dynamics: how to move on a sphere?

Driving forces of plate tectonics and the fate of subducted slabs

Intended Learning Outcomes: 1. Understand the anatomy and fundamental physical and chemical properties of, and processes within, the solid body of the Earth.

2. Understand the characteristics of the plate dynamics framework as it is currently being re-formulated towards a whole-earth geodynamic model, their measurement and their implications for earth-surface processes and hazards.

3. Enhanced team-working skills in interpreting geophysical and geological evidence in terms of plate dynamic processes and their geoscientific and hazard implications.

4. Be critically aware of current hot topics in plate tectonics and the physics and dynamics of the whole Earth.

Assessment:	Examination 1 (34%) Coursework 1 (33%) Coursework 2 (33%)
Assessment Description:	TBC
Moderation approach to main assessment:	Second marking as sampling or moderation
Assessment Feedback:	Students will receive examination feedback after exams if taken in January. Continual assessment feedback is given in writing on standard departmental feedback forms.
Failure Redemption:	Failure is non-redeemable in level 3
Additional Notes:	Delivery of both teaching and assessment will be blended including live and self-directed activities online and on-campus.
Available to Elective, Visiting and Exchange Students.	

GEG358 Measuring Climate Change

Credits: 20 Session: 2022/23 January-June

Pre-requisite Modules:

Co-requisite Modules:

Lecturer(s): Dr I Robertson, Prof MH Gagen, Prof NJ Loader

Format: Lectures (virtual) 24;
Workshops (virtual) 6.

Contact Hours will be delivered through a blend of live activities online and on-campus, and may include, for example, lectures, seminars, practical sessions and Academic Mentoring sessions.

Delivery Method: All Programmes will employ a blended approach to delivery using the Canvas Digital Learning Platform for live and self-directed online activity, with live and self-directed on-campus activities each week. Students may also have the opportunity to engage with online versions of sessions delivered on-campus

Primarily on the Singleton Campus

Module Aims: The aim of this module is to provide the participants with the relevant skills to place the widely reported anthropogenic influences upon climate into the perspective of a naturally changing climatic system. The module focuses upon the techniques used to reconstruct changes in climate over the last 1000 years and presents reconstructions at differing temporal scales. The module is directed towards students with a basic scientific and mathematical background.

Module Content: Description

The aim of this module is to provide the participants with the relevant skills to place the widely reported anthropogenic influences upon climate into the perspective of a naturally changing climatic system. The module focuses upon the techniques used to reconstruct changes in climate over the last 1000 years and presents reconstructions at differing temporal scales. There is an emphasis upon dendrochronology reflecting the relative importance of this topic within the literature. The mathematical techniques used to reconstruct past climates are discussed briefly. The module is directed towards students with a basic scientific and mathematical background.

Intended Learning Outcomes: - Develop a knowledge and understanding of the physical basis, application and limitations of the main techniques used in reconstructing the climate of the last 1000 years

- Synthesize the existing information on the climate of the last 1000 years
- Critically evaluate the published literature on the climate of the last 1000 year
- Assess the techniques used to obtain climatic information from proxy data.
- Discuss the key concepts involved in standardizing proxy indices to remove non-climatic trends
- Place the widely-reported anthropogenic trends in recent climate into the perspective of a naturally changing climatic system

Assessment: Coursework 1 (30%)
Coursework 2 (20%)
Examination 1 (50%)

Assessment Description: Outline of typical lecture topics:

- 1) Introduction (Climate dynamics, Medieval Climatic Anomaly, Little Ice Age, IPCC Report)
- 2) Dendrochronology (Ring-widths, methods of standardization, signal strength)
- 3) Dendrochronology (density)
- 4) Dendrochronology (stable isotopes, mass spectrometry)
- 5) The dating of other archives (including radiocarbon and lead-210 dating)
- 6) Documentary evidence for climatic change
- 7) Tephrochronology
- 8) Ice cores
- 9) Peat bogs
- 10) Laminated sediments
- 11) Methods of climatic reconstruction (correlation, calibration/verification of relationships)
- 12) Summary

Moderation approach to main assessment: Second marking as sampling or moderation

Assessment Feedback: Continual assessment feedback is provided online using standard departmental feedback forms.

Failure Redemption: Failure is non-redeemable in level 3

Additional Notes: Delivery of both teaching and assessment will be blended including live and self-directed activities online and on-campus.

Semester 2. Introductory lecture in Semester 1.

Normally available to elective, exchange and visiting students

GEG363 Volcanology	
Credits: 20 Session: 2022/23 January-June	
Pre-requisite Modules:	
Co-requisite Modules:	
Lecturer(s): Dr KJ Preece, Dr PG Albert, Prof SM Davies	
Format:	5 full days in the field (40 hours) 5 hour session on campus before and after trip (5 hours)
Delivery Method: Preparatory on-campus lectures, practical sessions and group meetings. Field trip.	
Module Aims: In this module, students will study magmatic and volcanic processes, from source to surface. We will follow the journey of magma, from its production inside the Earth, to eruption at the surface through volcanoes, and injection of volcanic ash and gases into the atmosphere. The module will cover magma generation, storage and evolution, ascent and eruption. Students will gain an understanding of processes underpinning eruptive styles and interpretation of these processes from the volcanic products. The module also explores how volcanism affects our planet's climate and society.	
Delivery of the module will include a combination of on-campus sessions and a field course to the Eifel Volcanic Field (Germany). The field course will enable in-situ study of diverse volcanic landforms and products, formed via a wide range of eruptive styles, including effusive and explosive eruptions. During the field course, students will study various aspects of volcanic geology, including learning how to observe, measure and interpret volcanic rocks and deposits.	
The module has a strong geological focus, and therefore a keen interest in geology and some previous knowledge of geology is highly recommended.	
Module Content: The module syllabus will include the following topics:	
<ul style="list-style-type: none"> • Volcanoes and their tectonic setting • Magma generation and evolution • Physical properties of magma • Effusive volcanism and lava • Explosive volcanism and pyroclastic deposits • Tephrochronology – principles and applications • Volcanoes, the atmosphere and climate 	
Intended Learning Outcomes: With successful completion of this module, students should be able to:	
<ul style="list-style-type: none"> • Describe, evaluate and interpret volcanic phenomena and processes operating on the journey of magma from source to surface. • Distinguish different volcanic products and determine from their characteristics the processes involved in their formation. • Analyze and interpret volcanological datasets. • Communicate scientific ideas and arguments in a coherent and concise manner. 	
Assessment:	Coursework 1 (25%) Coursework 2 (50%) Coursework 3 (25%)
Assessment Description: Pre-field course coursework (Assessment 1) Field course exercises (Assessment 2) Post- field course coursework (Assessment 3)	
Moderation approach to main assessment: Second marking as sampling or moderation	
Assessment Feedback: Students will receive individual feedback for all assessments in writing on standard departmental feedback forms and electronically via Canvas	
Failure Redemption: Resubmit failed assessment components. Alternative and/or supplementary assessment.	
Additional Notes: The module will be capped at 40 participants. Initial priority will go to students enrolled on Environmental Geoscience and Physical Geography degree programmes. If capacity allows, students enrolled on BSc and BA Geography pathways may enrol based on a random allocation.	
Not available to visiting and exchange students.	
Fieldtrip dates to be confirmed. There will be a small charge associated with the trip to cover travel costs.	