Swansea University
Prifysgol Abertawe

FACULTY OF SCIENCE AND ENGINEERING

UNDERGRADUATE STUDENT HANDBOOK

YEAR 1 (FHEQ LEVEL 4)

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 studentsin 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 otherresources:

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 1 (FHEQ Level 4) 2022/23
Environmental Science and the Climate Emergency
BSc Environmental Science and the Climate Emergency[F770]

Compulsory Modules

Semester 1 Modules	Semester 2 Modules
BIO109 **Core Skills for Biological Sciences** **20 Credits** **Dr SC Hocking**	**BIO112** **Life in the Oceans** **20 Credits** **Dr CD Lowe/Dr EC Pope**
Total 120 Credits	

Optional Modules

Choose exactly 20 credits

GEC133 is the welsh equivalent of GEG133

GEC133	Peryglon Naturiol a Chymdeithas	Dr RH Meara/Prof SM Davies/Dr KJ Preece/..	TB2	20
GEG133	Natural Hazards and Society	Dr RH Meara/Prof SM Davies/Prof MA Doel/..	TB2	20

And

Choose exactly 20 credits

GEC135	Cynaliadwyedd a'r Argyfwng Hinsawdd	Dr RH Meara/Dr KR Evans	TB1	20
GEG135	Sustainability and the Climate Emergency	Dr KH Halfacree/Dr KJ Ficken/Prof PRJ North/..	TB1	20

And

Choose exactly 20 credits

GEC140	Prosiect a Dulliau Ymchwil	Dr RH Meara	TB2	20
GEG140	Project and Methods	Dr RG Smith/Prof T Murray/Dr JAB Rosette/..	TB2	20

And

Choose exactly 20 credits

BIO111	Botany and Ecology	Dr PJ Neyland/Dr JN Griffin/Dr MJ Perkins/..	TB1	20
GEG132	Introduction to Earth Systems	Dr E Urbanek/Dr NJ Felstead/Dr H Hallang/..	TB1	20

BIO109 Core Skills for Biological Sciences

Credits: 20 Session: 2022/23 September-January

Pre-requisite Modules:

Co-requisite Modules:

Lecturer(s): Dr SC Hocking

Format: 23 lectures, 6 workshops, 3 PC labs, 1 laboratory chemistry practical, 1 feedback lectures.
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, small group teaching, ICT workshops, 1 lab practical and e-learning

Module Aims: This module is divided into three sections, scientific writing, data analysis and chemistry, which will equip students with the core skills needed throughout their degree program. The content of the module includes understanding the different types of data that can be measured and collected, the tools to formally present and analyse data and data analyses, and practical applications of spreadsheet software. There is a 'hands on' focus on dealing with data and developing basic mathematical and statistical analytical skills. Furthermore this module introduces first year undergraduates to the key skill of scientific writing, developing their ability to locate, understand, evaluate and communicate scientific information. Basic chemistry will be covered as a foundation to its importance to biological processes.

Module Content: The module will comprise of the following subjects:
· Using maths in Science
· Understanding data
· Types of data
· Units and measurement
· Using data bases
· Preparing figures, graphs and tables
· Sampling concepts
· Hypothesis testing
· Descriptive statistics
· Basic inferential statistics

- Basic rules to scientific writing
- Writing essays and practical reports
- Introduction to sources of scientific information and science in the public domain
- Essay writing
- Referencing

· Organic chemistry
· Stereochemistry
· Transition metal chemistry
· laws of kinetics
· chemical equilibria

Careers Development

- Resilience
- Developing Self Awareness
- Career options
- action planning
- CV’s cover letters
- creating a LinkedIn page

The module is supported by both lectures and guided / self directed computer sessions and workshops which include:

- Introduction to Spreadsheets & Databases
- Plotting data in Spreadsheet Packages
- Displaying data visually
- Simple Statistics by Hand
- Basic rules to scientific writing
- Essays and practical reports
- Utilising internet sources and search engines
- Referencing

Intended Learning Outcomes: LO1) Classify the different type of data and describe how they are measured
LO2) Recognise and apply standard units of measurement.
LO3) Demonstrate how and when to present data in tables or different types of figures and graphs.
LO4) Demonstrate practical knowledge of the use of databases and spreadsheet applications.
LO5) Apply knowledge of the use of descriptive and inferential statistics, including parametric and non-parametric tests to evaluate statistically significant relationships and/or differences.
LO6) Differentiate between the different statistical analyses associated with different types of data.

LO7) Identify and evaluate different forms of scientific communications and their applications.
LO8) Locate and utilise internet sources of scientific information such as peer reviewed journal articles using appropriate search engines.
LO9) Communicate, structure and format scientific information in a number of different writing styles encompassing essay writing and practical reports.
LO10) Utilise, format and structure references in a scientific essay
LO11) Recognise the problems and risks associated with different forms of academic misconduct.

LO12) Explain why chemistry is important to biology
LO13) Describe the basic structure of atoms, molecules etc
LO14) Describe different types of chemical bond and have a basic understanding of chemical reactions.
LO15) Know how to make up molar solutions
LO16) Understand what pH is and how it is important in biological reactions
LO17) Explain the basic chemical structure of proteins, fats and carbohydrate
LO18) Describe the role of different metals in biology.
LO19) Understand the importance of self-reflection and career development skills

Assessment: Coursework 1 (25%)
Coursework 2 (15%)
Coursework 3 (25%)
Coursework 4 (25%)
Coursework 5 (10%)

Assessment Description:
Coursework 1: Essay
Coursework 2: Displaying data visually
Coursework 3: Chemistry report
Coursework 4: Statistics Assignment
Coursework 5: Scientific writing portfolio - Blackboard tests

Moderation approach to main assessment: Not applicable

Assessment Feedback: Feedback is given directly on submitted continuous assessment assignments through annotated scripts, feedback forms and via a feedback lecture session as appropriate

Failure Redemption: Resit examination, resubmission of coursework of failed element

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

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.

BIO111 Botany and Ecology

Credits: 20 Session: 2022/23 September-January

Pre-requisite Modules:

Co-requisite Modules:

Lecturer(s): Dr PJ Neyland, Dr JN Griffin, Dr MJ Perkins

Format: 24 hours in person live lectures (or Zoom if necessary)
12 hours laboratory practicals
3 hours field practical
Additional Zoom sessions for Q and A.
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: Synchronous and asynchronous online lectures, laboratory and field practicals, eLearning, Canvas VLE used to disseminate information, short lectures, Zoom interactions and quizzes

Module Aims: Botany lectures cover the structure, life cycles and morphology of the major living Divisions of the Plant Kingdom. Floral structure, pollination, fruit dispersal and seed germination are discussed with particular reference to plant/animal interactions. This is followed by lectures that cover the basic anatomy of higher plants, from the cellular to the whole organism level. Lectures on plant physiology will emphasise flowering plants as whole organisms and concentrate particularly on plant-environment interactions. The topics covered are: photosynthesis; water relations; mineral nutrition; organic translocation; growth; developmental physiology. Aspects of plant ecology, plant-herbivore interactions and the importance of plants in medicine will also be covered. The lectures on plants are complemented by two laboratory practical sessions; Lower plant classification is studied by development of a dichotomous key; Basic anatomy and cell structure are studied microscopically; Physiological experiments illustrate aspects of plant water relations. Additionally, taxonomy and classification of species from the major divisions are studied by demonstrations displaying a wide range of specimens, along with examples of flower structure, pollination types and seed/fruit dispersal.
Ecology lectures cover the study of the interactions of organisms with their environment. The topic is divided into four key themes: the individual (conditions and resources, population distribution and abundance, population growth and regulation, population dynamics), species interactions (competition and predation), communities (patterns in space and time) and
ecosystems (flux of energy and matter, food webs and patterns in species richness). A field practical looking at individuals (adaptation to ecological conditions and species area relationships) will develop skills in species identification, ecological sampling and ecological data analysis.
A lecture in plant ecology draws these two concepts together.
Note - lectures here refer to material that is presented on Canvas pages and delivered as live in-person lectures.

Module Content: Syllabus
The following distribution of lecture material is indicative; due to the interactive mode of teaching it is subject to modification.
Botany
•Classification, evolution and life cycles of non-vascular and vascular plants
•Pollination, fertilisation and dispersal in seed plants
•Plant biotechnology, genetic engineering
•Plant growth regulators (hormones)
•Plant growth and repsonses to light
•Water relations
•Mineral nutrition
•Mychorrhiza
•Photosynthesis, translocation
•Photosynthesis and global climate change
•Herbivory, plants, secondary metabolites and medicine

Ecology
•Conditions, resources and the ecological niche
•Population distribution, abundance and life histories
•Population growth, regulation and dynamics
•Competition
•Predation and herbivory
•Communities; patterns in space and time
•Ecosystems; flux of energy and matter
•Food webs
•Patterns in species richness

Final lecture
• Plant ecology; populations, habitats, ecosystems and biomes

Practicals
Botany - Plant anatomy
Botany - Plant physiology experiment
Botany - Plant Kingdoms: taxonomy and classification, bryophytes, pteridophytes, gymnosperms and angiosperms
Ecology - Rocky shore ecology: individuals to communities
(Note order of practicals may change according to weather)

Intended Learning Outcomes: By the end of the module, the student should be able to:
LO1) Describe the evolution, classification and morphology of plants and recognise typical specimens from the Divisions
LO2) Compare and contrast the reproductive strategies and life cycles of plants from the major divisions (vascular and non-vascular plants).
LO3) Describe and illustrate the physical structure of flowering plants from the cellular to the whole plant level.
LO4) Summarise the physiological functioning of flowering plants, their interactions with the environment and their importance in the biosphere.
LO5) Have knowledge of ecology and biological diversity, including structure, function, physiological constraints, evolution and adaptations to the environment
LO5) Become proficient in microscopy and scientific illustration of cells
LO6) Undertake, record, analyse and discuss some basic experiments in plant physiology
LO7) Utilise taxonomic keys and guides to identify and classify organisms across a broad range of phyla during practical investigations
LO8) Utilise field based ecological sampling techniques
LO9) Work as a team and be able to utilise appropriate sampling and surveying techniques so that they can be employed in ecological research and monitoring
LO10) Draw links and identify themes between the range of scientific subject investigated within constructing meaning from oral, written, and numerical information through interpretation and summarising key component
LO11) Analyse and interpret data derived from experimental observations in terms of their significance and in the context of established knowledge utilising appropriate statistical techniques.
LO12) Use relevant literature, information and programme resources to support the design, execution and analysis of practical investigations.

Assessment: Coursework 1 (10%)
Coursework 2 (15%)
Coursework 3 (25%)
Exam - Multiple choice questions (50%)

Assessment Description: Coursework 1: Anatomical drawings of plant cells (microscopy)
Coursework 2: Ecology poster from field practical (adaptations and species-area relationships)
Coursework 3: Laboratory practical report on plant physiology experiment (chemistry and water relations)
Examination: (January) 100 Multiple Choice Questions based on all material taught in Botany and Ecology lectures

Moderation approach to main assessment: Not applicable

Assessment Feedback: Formal feedback in practical classes and lectures
Individual comments on submitted coursework
One to one discussion available in drop-in sessions upon request
Electronic feedback on work submitted online
Formative feedback on Canvas quizzes

Failure Redemption: Resit of examination
Re submission of coursework

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

Normally available to elective, visiting or exchange students. Please note that any failures are redeemed during the August resit period, so students must ensure their availability. Field practical material may be subject to change depending on weather conditions.

BIO112 Life in the Oceans

Credits: 20 Session: 2022/23 January-June

Pre-requisite Modules:

Co-requisite Modules:

Lecturer(s): Dr CD Lowe, Dr EC Pope

Format: 25 h of lectures
6 h laboratory work
4 h of fieldwork
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: lectures, laboratory practicals, fieldwork,workshop, eLearning.

Module Aims: This module introduces students to the largest biome on the planet and the huge variety of life it contains; over 71% of the Earth's surface is covered by ocean and its health is intricately connected with our own. Lectures will consider the formation of ocean basins and key oceanographic processes within them before moving onto the chemical and physical properties of water. The module will introduce students to primary production in the ocean, the huge diversity of life within marine food chains, and key processes in nutrient cycling. Marine ecosystems will be discussed in detail, with focus on those found around the UK, before considering the interaction between humans and the oceans and the challenges faced by marine organisms in an ocean changing because of our activities. This module has been modified to be delivered during the COVID-19 pandemic.

Module Content: Lecture themes:

1. Introduction to the oceans
2. Waves, tides and currents
3. Chemical and physical properties of seawater
4. Plankton and productivity in marine ecosystems
5. Nutrient cycling
6. Microalgae definitions and taxonomy
7. Marine invertebrates
8. Marine fish
9. Marine reptiles, birds and mammals
10. Introduction to marine ecology
11. Estuarine and intertidal systems
12. Shallow seas
13. Deep sea
14. Tropical seas
15. Polar seas
16. UK marine habitats
17. Humans and the oceans
18. The changing oceans

Intended Learning Outcomes: LO1 Describe how oceans form and describe oceanic processes;
LO2 Safely undertake fieldwork in the intertidal habitat;
LO3 Comprehend the physiological functioning of micro- and macroalgae, their interactions with the environment and their importance both in aquatic ecosystems and to humans;
LO4 Explain the drivers of the diversity of marine animal life;
LO5 Describe the variety of marine ecosystems, with particular reference to UK habitats;
LO6 Define concepts underpinning the ecology and diversity of marine ecosystems;
LO7 Explain the interplay between society and the oceans;
LO8 Produce detailed laboratory reports, including data analysis and use of other research to strengthen arguments;
LO9 Discuss the importance of correctly citing academic work;

Assessment:	Examination (50%) Coursework 1 (10%) Coursework 2 (15%) Coursework 3 (15%) Coursework 4 (10%)
Assessment Description: Examination: 100 Multiple Choice Questions based on all material taught in lectures. Coursework 1: construction of standard curve; Coursework 2: mussel feeding; Coursework 3: short exercises to be completed after rocky shore field trip. Coursework 4: kelp report	
Moderation approach to main assessment: Not applicable	
Assessment Feedback: Personal feedback provided on coursework submitted. Direct general feedback during lectures and practical sessions. Formal feedback session to discuss examination results.	
Failure Redemption: Resit of examination Re submission of coursework	
Additional Notes: Delivery of both teaching and assessment will be blended including live and self-directed activities online and on-campus. 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. Lecture and practical material may be subject to change depending on staff availability and weather conditions.	

GEC133 Peryglon Naturiol a Chymdeithas

Credits: 20 Session: 2022/23 January-June

Pre-requisite Modules:

Co-requisite Modules:

Lecturer(s): Dr RH Meara, Prof SM Davies, Dr KJ Preece

Format: 20 darlith, 4 dosbarth ymarferol, 1 sesiwn ‘diwrnod trychineb’ diwrnod o hyd

1 hour lectures
2 x 2 practical classes
1 day long 'disaster day'

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 y Campws

On Campus

Module Aims: .Bydd y modiwl hwn yn ymchwilio i agweddau peryglus amgylchedd y Ddaear a pherthynas y gymdeithas â nhw. Bydd egwyddorion cychwynnol yn cynnwys diffiniad o berygl naturiol, trychineb, risg a cholled ac ymagweddau at leihau risg a rheoli trychinebau. Mae’r prif fathau o berygl naturiol yn cael eu hastudio er mwyn deall sut maent yn gweithredu, ble, a pha mor aml maent yn debygol o ddigwydd. Caiff canlyniadau peryglus eu hystyried, yn ogystal â sut gall y gymdeithas ymateb i ddigwyddiadau peryglus. Mae agweddau allweddol yn cynnwys trafod peryglon cynradd ac eilradd, rhagweld a monitro peryglon, a deall sut y gellir lleihau eu heffeithiau niweidiol. Bydd y peryglon naturiol a fydd yn cael eu hystyried yn y modiwl hwn yn cynnwys ffrwydradau llosgfynyddoedd, daeargrynfeydd, tswnamïau, tanau gwyllt, tirlithriadau, digwyddiadau tywydd eithafol, llifogydd, cwympfeydd eira a Pheryglon Mawr. Bydd y modiwl hefyd yn ystyried y cysyniad o “Bobl fel Peryglon”. Bydd darlithoedd yn ymdrin ag egwyddorion cyffredinol ynghyd ag astudiaethau achos. Bydd dosbarthiadau ymarferol yn atgyfnerthu’r cysyniadau a drafodir mewn darlithoedd. Bydd agwedd ymarferol y gwaith hwn yn dod i uchafbwynt mewn diwrnod efelychu rheolaeth mewn trychineb.

This module investigates hazardous aspects of Earth’s natural environment and how society relates to them. Introductory principles include the definition of natural hazard, disaster, risk and loss, and approaches to reducing risk and managing disasters. Major types of natural hazard are studied in order to understand how they operate, where, and how frequently they are likely to occur. Hazardous consequences are explored, as well as how society can respond to hazardous events. Key aspects include discussion of primary and secondary hazards, prediction, forecasting and monitoring of hazards, and understanding how their harmful effects can be minimised.

Natural hazards considered during this module include volcanic eruptions, earthquakes, tsunamis, wildfires, landslides, extreme weather events, flooding, avalanches and Mega Hazards. The module will also consider the concept of “Humans as Hazards”. Lectures consider general principles as well as case studies. Practical classes reinforce concepts learned in lectures. The practical aspect of the work will culminate in a disaster management simulation day.

Module Content: Cyflwyniad i beryglon a thrychinebau
Peryglon naturiol – prosesau a chanlyniadau ffrwydradau llosgfynyddoedd, daeargrynfeydd, tswnamïau, tanau gwyllt, tirlithriadau, digwyddiadau tywydd eithafol, llifogydd, cwympfeydd eira a pheryglon mawr.
Agweddau thematig - cofnod daearegol o ddigwyddiadau trychinebus fel dangosydd o'r tebygrwydd y byddant yn digwydd yn y dyfodol;
monitro peryglon, newid byd-eang a pheryglon naturiol; byw gyda pheryglon naturiol.

Ymhlith y testunau y mae:
Cyflwyniad i beryglon a thrychinebau
Peryglon folcanig
Tanau gwyllt
Peryglon seismig
Peryglon sy'n gysylltiedig â goleddfau, Peryglon Mawr Peryglon Corwyntoedd
Arsylwi'r Ddaear o ran rheoli peryglon, newid a pheryglon amgylcheddol yn y dyfodol, llifogydd yn y dyfodol a pheryglon hydrolegol Tswnamïau
Risg i'r gymdeithas a chadernid

Introduction to hazards and disasters
Natural hazards - the processes and consequences of volcanic eruptions, earthquakes, tsunamis, wildfires, landslides, extreme weather events, flooding, avalanches and mega hazards
Thematic aspects - the geological record of catastrophic events as an indicator of their likely future occurrence; monitoring hazards, global change and natural hazards; living with natural hazards.

Topics include:
Introduction to natural hazards and disasters
Volcanic hazards
Wildfires
Seismic hazards
Slope-related hazards
Megahazards
Hurricane hazards
Future environmental change & hazards
Flood hazards & hydrological hazards
Tsunamis
Risk society and resilience

Intended Learning Outcomes: Erbyn diwedd y modiwl hwn, dylai cyfranogwyr allu:
•diffinio peryglon naturiol, trychinebau, colledion a risg;
•esbonio sut y gall prosesau naturiol effeithio'n andwyol ar bobl, eu heiddo a'r amgylchedd;
•esbonio'r prosesau ffisegol sy'n achosi ffrwydradau llosgfynyddoedd, daeargrynfeydd, tswnamïau, tanau gwyllt, tirlithriadau, y tywydd, llifogydd, cwympfeydd eira a pheryglon mawr.
•asesu'r dystiolaeth ar gyfer, a risg sy'n deillio o, ddigwyddiadau amlder isel ond o bwysigrwydd mawr
•disgrifiad o ddosraniad digwyddiadau naturiol catastroffig mewn gofod ac amser;
•dangos sut mae effeithiau digwyddiadau peryglus yn dibynnu ar gamau gweithredu'r gymdeithas cyn ac yn ystod digwyddiadau ac
esbonio rolau camau lliniaru, monitro, rhagweld a rhybuddio wrth leihau'r risg o beryglon naturiol;

By the end of this module you should be able to:
• define natural hazards, disasters, losses and risk;
• explain how natural processes can adversely affect people, their property and the environment;
• explain the physical processes that cause volcanic eruptions, earthquakes, slope failures, tsunamis, avalanches, weather, flooding, megahazards and wildfires;
• assess the evidence for and risk from high-magnitude-low-frequency events;
• describe the distribution in space and time of catastrophic natural events;
• show how the effects of hazardous events depend on actions taken by society before and during the events and explain the roles of mitigation, monitoring, forecasting and warning in reducing the risk from natural hazards;

Assessment: Examination 1 (50%)
Coursework 1 (10%)
Coursework 2 (10%)
Coursework 3 (30%)
Resit Assessment: Examination (Resit instrument) (100%)

Assessment Description: Gwaith Cwrs 1 – Gwaith Ymarferol Archifau (10%)
Gwaith Cwrs 2 – Map peryglon folcanig (10%)
Gwaith Cwrs 3 – Adroddiad sy'n seiliedig ar efelychiadau trychinebau (30%)
Arholiad – Arholiad Aml-ddewis (50%)

Coursework 1 - Archive practical (10%)
Coursework 2 - Volcanic hazard map (10%)
Coursework 3 - Report based on disaster simulations (30%)
Exam - Multiple Choice Exam (50%)

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

Assessment Feedback: Darperir adborth grwp ar gyfer adroddiadau¿r diwrnod trychineb gan ddefnyddio ffurflenni adborth safonol yr adran.
Bydd sylwadau unigol ar gyfer atebion arholiad; Bydd myfyrwyr yn gallu gweld y rhain mewn cyfarfodydd tiwtorial adrannol. Rhoddir adborth cyffredinol ar atebion arholiad drwy Blackboard.
Darpariaeth asesu ar gyfer myfyrwyr ag anableddau
Gwneir darpariaeth ar gyfer myfyrwyr ag anableddau yn unol â chyngor gan y Swyddfa Anableddau. Rhowch fanylion am sut y byddai myfyrwyr yn gwneud yn iawn am fethiant yn y modiwl

Group feedback is provided for the disaster day reports using standard departmental feedback forms.
Individual comments are written on examination answers; students will be able to view these in departmental tutorial meetings. General feedback on examination answers will be provided via Blackboard.

Failure Redemption:
Arholiad ail-leoli

Resit examination

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

Ar gael i fyfyrwyr gwadd a myfyrwyr cyfnewid.

Available to visiting and exchange students.

GEC135 Cynaliadwyedd a'r Argyfwng Hinsawdd

Credits: 20 Session: 2022/23 September-January

Pre-requisite Modules:

Co-requisite Modules:

Lecturer(s): Dr RH Meara, Dr KR Evans

Format: 36 o oriau cyswllt (32 awr o ddarlithoedd; 4 awr o weithdai)

36 contact hours (32 hours of lectures; 4 hours of workshops)
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 y Campws

On Campus

Module Aims: Bydd y modiwl hwn yn gyflwyniad i newid amgylcheddol byd-eang a bydd yn ystyried agweddau ar gynaliadwyedd fel pwnc sy'n effeithio ar fywydau bob dydd. Mae her cynaliadwyedd yn sylweddol a bydd y darlithoedd yn eich darparu â'r wybodaeth a fydd ei hangen arnoch i ymwneud â Nodau Datblygu Cynaliadwy'r

This module is an introduction to global environmental change and explores aspects of the issue of sustainability as it affects everyday lives. The challenge of sustainability is significant and the lectures will provide you with the information needed to engage with the UN's Sustainable Development Goals.

Module Content: Wythnos
1-3Cyflwyniad: Rhyngweithio dynol-ddaearol
- Newid mewn poblogaethau ac effaith amgylcheddol
- Gwareiddiadau a'r hinsawdd
- System hinsoddol
- Newid yn yr hinsawdd
- Gwleidyddiaeth newid yn yr hinsawdd
- Her cynaliadwyedd
- Dirywiad amgylcheddol
- Y Nodau Datblygu Cynaliadwy
4-7 Defnydd tir a dirywiad
7-9 Materion trefol
9-11 Effeithiau newid yn yr hinsawdd
11 Casgliad: Tuag at brifysgol gynaliadwy?

Week
1-3 Introduction: human-earth interaction
- Population change and environmental impact
- Civilizations and climate
- Climate System
- Climate change
- Politics of climate change
- The challenge of sustainability
- Environmental degradation
- The Sustainable Development Goals
4-7 Land use and degradation
7-9 Urban issues
9-11 Climate change impacts
11 Conclusion: towards the sustainable university?

Intended Learning Outcomes: Erbyn diwedd y modiwl hwn, dylai cyfranogwyr allu:
1. Deall cysyniadau allweddol newid amgylcheddol byd-eang.
2. Dadansoddi pwysigrwydd perthynol ffactorau dynol a ffisegol wrth achosi newid amgylcheddol.
3. Deall bod agweddau diwylliannol, economaidd, cymdeithasol, gwleidyddol a ffisegol ar 'cynaliadwyedd'.
4. Gwerthuso agweddau ar 'cynaliadwyedd' o fewn ystod o gyd-destunau daearyddol.
5. Disgrifio dulliau diweddar i fonitro a modelu newid amgylcheddol byd-eang.
6. Adolygu'n feirniadol dystiolaeth canlyniadau newid amgylcheddol byd-eang a'r her sy'n wynebu datblygiad cynaliadwy.

By the end of this module you should be able to:
1. Understand key concepts of global environmental change.
2. Analyse the relative importance of human and physical factors in causing environmental change.
3. Recognise that 'sustainability' has cultural, economic, social, political and physical dimensions.
4. Evaluate aspects of 'sustainability' within a range of geographical contexts.
5. Describe recent methods to monitor and model global environmental change.
6. Critically review the evidence of the consequences of global environmental change and the challenge facing sustainable development.

Assessment: Coursework 1 (20%)
Examination 1 (40%)
Coursework 2 (40%)

Assessment Description: Arholiad Cwestiynau Aml-ddewis (Ionawr);
C1 1 x blog 500 gair
C2 2 x blog 500 gair (cyfanswm 1,000 o eiriau)
Bydd hwn yn asesiad ffurfiannol fel rhan o'r cwrs hwn.

Moderation approach to main assessment: Partial second marking

Assessment Feedback: Bydd myfyrwyr yn derbyn adborth electronig ar yr adroddiad unigol. Bydd myfyrwyr yn derbyn adborth arholiad yn dilyn yr arholiadau

Students will receive electronic feedback on the individual report.
Students will receive examination feedback after exams.

Failure Redemption: Ailsefyll arholiad neu ailgyflwyno gwaith cwrs

Resit examination or resubmit coursework

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 ymweld neu fyfyrwyr cyfnewid. Nid oes rhagofynion na chydofynion ar gyfer y modiwl hwn.

Normally available to elective visiting or exchange students. There are no pre- or co-requisites for this module.

GEC140 Prosiect a Dulliau Ymchwil

Credits: 20 Session: 2022/23 January-June

Pre-requisite Modules:

Co-requisite Modules:

Lecturer(s): Dr RH Meara

Format: 26 awr ar gyfer penwythnos preswyl ac 11 awr ar gyfer prosiect GIS

Delivery Method: Darlithoedd, Sesiynau Ymarferol (ar y campws) a penwythnos preswyl o waith maes ym Mangor/Abertawe a'i ranbarth/Aberystwyth (lleoliad yn newid yn flynyddol).

Module Aims: Mae'r modiwl hwn yn cynnwys hyfforddiant gwaith maes a sgiliau GIS i ddaearyddwyr dynol a ffisegol.

Rhan 1: Mae'r rhan yma yn cyflwyno egwyddorion a thechnegau allweddol a ddefnyddir mewn gwaith maes yn nisgyblaethau Daearyddiaeth, astudiaethau amgylcheddol ac astudiaethau defnyddio tir. Mae'n cynnig profiad o ddefnyddio amryw o ddulliau a thechnegau gwaith maes er mwyn casglu a dadansoddi gwybodaeth mewn perthynas â Daearyddiaeth, yr amgylchedd a defnyddio tir. Dysgir y modiwl ar y cyd â staff o Brifysgol Bangor a Phrifysgol Aberystwyth a dysgir y myfyrwyr o'r sefydliadau yma hefyd ar y modiwl. Dysgir rhan yma'r modiwl yn ystod
penwythnos preswyl.

Rhan 2: Prosiect GIS. Bydd yr elfen hon o'r modiwl yn rhoi cyflwyniad i fyfyrwyr i sgiliau allweddol Mapio, Data Gofodol a GIS. Byddant yn ymchwilio i sut mae mapiau a dadansoddiad gofodol yn gallu ein helpu i ddeall a monitro ein byd. Bydd myfyrwyr yn ystyried y defnydd o fapio i ddadansoddi'r amgylchedd a rhannu'r canlyniadau yn y cyfryngau. Byddant yn archwilio i feddalwedd GIS Explore (arc Map, QGIS) a chymryd y camau cyntaf wrth arddangos data gofodol. Bydd myfyrwyr hefyd yn dysgu sut i gyfeirio lleoliad gofodol nodweddion amgylcheddol ar arwyneb y Ddaear, deall sut mae systemau cyfeirio'n berthnasol i leoliadau daearyddol ar fap gwastad a dysgu sut i weithio gyda data o amrywiaeth o systemau cyfeirio gofodol.

Module Content: Rhan 1: Penwythnos preswyl:

1. Cyflwyno a datblygu egwyddorion ac arferion technegau allweddol gwaith maes yn nisgyblaethau daearyddiaeth, astudiaethau amgylcheddol ac astudiaethau defnyddio tir;
2. Cynnig profiad o ddefnyddio amryw ddulliau a thechnegau gwaith maes er mwyn casglu gwybodaeth mewn perthynas â daearyddiaeth, yr amgylchedd a defnyddio tir;
3. Rhoi hyfforddiant wrth roi cyflwyniadau ar lafur ac ar bapur;
4. Rhoi hwb i allu myfyrwyr i ddehongli data maes;
5. Cynnig profiad a hyfforddiant wrth roi cyflwyniadau ar lafur ac ar bapur.

Trafodir cyfuniad o'r themau canlynol yn ystod y modiwl:
Gwerthuso biomas coetiroedd; Daearyddiaeth eithrio yn Aberystwyth; gwerthuso defnydd tir yng ngogledd-orllewin Cymru: ffactorau ffisegol a dynol; cymunedau gweldig Cymru: parhad a newid; newidiadau amgylcheddol yn Ne Cymru.

Rhan 2: Prosiect GIS.

Mapio, Data Gofodol a GIS
Data gofodol a Systemau Gwybodaeth Ddaearyddol
Ymchwilio i sut gall mapiau a dadansoddiad gofodol ein helpu i ddeall a monitro ein byd. Ystyried y defnydd o fapiau i ddadansoddi'r amgylchedd a rhannu'r canlyniadau yn y cyfryngau. Ymchwilio i feddalwedd GIS (arc Map, QGIS) a chymryd y camau cynaf i arddangos data gofodol. Dysgu ac ymarfer gweithio gyda fformatiau gwahanol o ddata (fector a rhastr).
Dysgu sut i greu mapiau a chynnwys elfennau allweddol ar fap (bar graddfa, allwedd, graticwl). Galluogi darllenwyr i ddehongli eich map a deall eich canlyniadau.
Mae astudiaethau achos yn cynnwys rhestr Fforest a mapio defnydd tir a phoblogaeth a dosraniad dinasoedd byd-eang

Intended Learning Outcomes: Wrth gwblhau'r modiwl hwn dylai myfyrwyr fedru:
1. Trafod addasrwydd yr amryw ddulliau a thechnegau sy'n allweddol i waith maes Daearyddiaeth, yr amgylchedd a defnyddio tir;
2. Defnyddio technegau penodol er mwyn casglu gwybodaeth yn y maes;
3. Dadansoddi a chyflwyno canlyniadau gwaith maes;
4. Deall, dehongli a gwerthuso data maes;
5. Gywiro, defnyddio, dadansoddi a chyflwyno data daearyddol;
6. Dangos sgiliau allweddol wrth Fapio, Data Gofodol a GIS;
7. Trafod sut gall mapiau a dadansoddiad gofodol ein helpu i ddeall a monitro ein byd.

Assessment:
Coursework 1 (5%)
Coursework 2 (23%)
Coursework 3 (23%)
Coursework 4 (50%)

Assessment Description: C1 - Cyflwyniad grp, 5%
C2 – Adroddiad, 22.5%
C3 – Poster academaidd 22.5%
C4 – adroddiad GIS – 50%

Ymgymerir â C1 yn ystod y cwrs maes preswyl. Mae C2 fel arfer yn 1,500 o eiriau. Mae C4 yn adlewyrchu GEG140.

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

Assessment Feedback: Bydd myfyrwyr yn derbyn adborth electronig ar eu gwaith cwrs ac adborth ysgrifenedig ar y cyflwyniad grwp, ac ar lafar gan eu tiwtor ar eu perfformiad.

Failure Redemption: Ailsefyll yr holl elfennau

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

Dysgir y modiwl yma drwy gyfrwng y Gymraeg. Not normally available to visiting or exchange students. Competence in written and spoken Welsh is essential for this module

GEG132 Introduction to Earth Systems

Credits: 20 Session: 2022/23 September-January

Pre-requisite Modules:

Co-requisite Modules:

Lecturer(s): Dr E Urbanek, Dr NJ Felstead, Dr H Hallang, Dr I Robertson

Format: Lectures
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 forms an essential foundation for more advanced study of physical geography and environmental sciences. It introduces the four main Earth systems: the atmosphere, hydrosphere, biosphere and geosphere. It provides a sound understanding of the processes within each system, and the interactions between them. The geosphere section introduces topics like the origin of Earth, plate tectonics and describes the distribution of different rock types and processes occurring in the geosphere. The biosphere section deals mainly with flows of energy and nutrients between Earth systems.
The atmosphere section deals with flows of energy and moisture and their role in controlling climate over both space and time. The hydrosphere section focuses on the concepts of the hydrological cycle and the main processes associated with the water fluxes.
In addition, the main properties and functions of soil, and the formation of different soil types worldwide are introduced. At the end of the module the changes in climate in the past, current and future, proxies of climate change are included.

Module Content: 1 Introduction - Interactions between Earths systems
2 Atmosphere - Structure, energy budget
3 Atmosphere - GHG effect, clouds
4 Atmosphere - General circulation and world climate
5 Atmosphere - Weather, fronts, storms
6 Hydrosphere - Water cycle
7 Hydrosphere - Precipitation
8 Hydrosphere - Evapotranspiration
9 Hydrosphere - Hillslope runoff
10 Hydrosphere - Catchments and rivers
11 Hydrosphere - Groundwater
12 Pedosphere - Soil formation
13 Pedosphere - Soil function and services
14 Pedosphere - Soil & Climate change
15 Biosphere - Photosynthesis
16 Biosphere - Vegetation zones
17 Biosphere - C cycle
18 Biosphere - N cycle
19 Biosphere - Biogeochemical cycles
20 Biosphere - Biogeography
21 Geosphere - Earth origin
22 Geosphere - Rock formation
23 Geosphere - Weathering
24 Geosphere - Erosion
25 Geosphere - Karst
26 Geosphere - Glacial
27 Geosphere - Coastal Environments
28 Climate change in the past
29 Climate proxies
30 Climate change present and future

Intended Learning Outcomes: By the end of the module you should be able to:
1. Explain the origin of the Earth, including rock formation, and give examples of specific landforms produced by Earth's surface processes
2. Describe and explain variations in topography, weathering and erosion across the Earth's surface
3. Explain the relationship between atmospheric chemistry, atmospheric circulation and world climate; Describe the evolution of common weather events
4. Describe the main features of the hydrological cycle, main hydrological processes, their controls and variation across the Earth's surface; explain the dynamics of sea ice and permafrost on global ocean dynamics and sea level fluctuations.
5. Explain how energy and nutrients flow through Earth's ecosystems.
6. Describe the interactions between reservoirs and fluxes in the primary biogeochemical cycles

Assessment: Online Class Test (20%)
Online Class Test (20%)
Exam - Multiple choice questions (60%)

Assessment Description: 2 Canvas tests to be completed in students' own time. (20% each)
Exam - Multiple choice questions (60%)

Resit:
Coursework 1 - Essay (1200 words) on a provided question. (100%)

Moderation approach to main assessment: Partial second marking

Assessment Feedback: Students will receive feedback on their online tests within 3 weeks after their submission.

Failure Redemption: Resit:
Coursework 1 - Essay (1200 words) on a chosen topic. (100%)

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

Normally available to elective visiting or exchange students.

GEG133 Natural Hazards and Society

Credits: 20 Session: 2022/23 January-June

Pre-requisite Modules:

Co-requisite Modules:

Lecturer(s): Dr RH Meara, Prof SM Davies, Prof MA Doel, Prof SH Doerr, Dr NJ Felstead, Dr J Hiemstra, Dr KJ Preece

Format: Online lecture content
10 x 2 hour synchronous sessions
20 hours enquiry-based field course
5 x 1 hour long disaster scenarios

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 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 investigates hazardous aspects of Earth's natural environment and how society relates to them. Introductory principles include the definition of natural hazard, disaster, risk and loss, and approaches to reducing risk and managing disasters. Major types of natural hazard are studied in order to understand how they operate, where, and how frequently they are likely to occur. Hazardous consequences are explored, as well as how society can respond to hazardous events. Key aspects include discussion of primary and secondary hazards, prediction, forecasting and monitoring of hazards, and understanding how their harmful effects can be minimised.

Natural hazards considered during this module include volcanic eruptions, earthquakes, tsunamis, wildfires, landslides, extreme weather events, flooding, avalanches and Mega Hazards. Lecture material considers general principles as well as case studies. The module is compulsory for students taking BSc Environmental Geoscience.

Module Content: Introduction to hazards and disasters
Natural hazards - the processes and consequences of volcanic eruptions, earthquakes, tsunamis, wildfires, landslides, extreme weather events, flooding, avalanches and mega hazards
Thematic aspects - the geological record of catastrophic events as an indicator of their likely future occurrence; monitoring hazards, global change and natural hazards; living with natural hazards.

Topics include:
Introduction to natural hazards and disasters
Volcanic hazards
Wildfires
Seismic hazards
Slope-related hazards
Megahazards
Hurricane hazards
Future environmental change & hazards
Flood hazards & hydrological hazards
Tsunamis
Risk society and resilience

Intended Learning Outcomes: By the end of this module you should be able to:
• define natural hazards, disasters, losses and risk;
• explain how natural processes can adversely affect people, their property and the environment;
• explain the physical processes that cause volcanic eruptions, earthquakes, slope failures, tsunamis, avalanches, weather, flooding, megahazards and wildfires;
• assess the evidence for and risk from high-magnitude-low-frequency events;
• describe the distribution in space and time of catastrophic natural events;
• show how the effects of hazardous events depend on actions taken by society before and during the events and explain the roles of mitigation, monitoring, forecasting and warning in reducing the risk from natural hazards;

Assessment:	Examination 1 (50%) Coursework 1 (10%) Coursework 2 (10%) Coursework 3 (30%)
Resit Assessment:	Examination (Resit instrument) (100%)

Assessment Description: Coursework 1 - Archive practical (10%)
Coursework 2 - Volcanic hazard map (10%)
Coursework 3 - Report based on disaster simulations (30%)
Exam - Multiple Choice Exam (50%)

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

Assessment Feedback: Individual marks and feedback will be given for the archives exercise, hazard map exercise and write up of disaster scenario. Individual marks for examination answers.

Failure Redemption: Resit examination

Additional Notes: This module is compulsory for students enrolled for the BSc Environmental Geoscience degree scheme.
This module is not available to visiting or exchange students.

GEG135 Sustainability and the Climate Emergency

Credits: 20 Session: 2022/23 September-January

Pre-requisite Modules:

Co-requisite Modules:

Lecturer(s): Dr KH Halfacree, Dr KJ Ficken, Prof PRJ North

Format: 36 contact hours (32 hours of lectures; 4 hours of workshops)
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 is an introduction to global environmental change and explores aspects of the issue of sustainability as it affects everyday lives. The challenge of sustainability is significant and the lectures will provide you with the information needed to engage with the UN's Sustainable Development Goals.

Module Content: Week
1-3 Introduction: human-earth interaction
- Population change and environmental impact
- Civilizations and climate
- Climate System
- Climate change
- Politics of climate change
- The challenge of sustainability
- Environmental degradation
- The Sustainable Development Goals

4-7 Land use and degradation
7-9 Urban issues
9-11 Climate change impacts
11 Conclusion: towards the sustainable university?

Intended Learning Outcomes: By the end of this module you should be able to:
1. Understand key concepts of global environmental change.
2. Analyse the relative importance of human and physical factors in causing environmental change.
3. Recognise that 'sustainability' has cultural, economic, social, political and physical dimensions.
4. Evaluate aspects of 'sustainability' within a range of geographical contexts.
5. Describe recent methods to monitor and model global environmental change.
6. Critically review the evidence of the consequences of global environmental change and the challenge facing sustainable development.

Assessment: Coursework 1 (20%)
Examination 1 (40%)
Coursework 2 (40%)

Assessment Description: Multiple Choice Exam (in January);
Blog 1 500 words
Blog 2 500 words
Blog 3 500 words
There will also be formative assessment on this course.

Moderation approach to main assessment: Partial second marking

Assessment Feedback: Students will receive electronic feedback on the individual report.
Students will receive examination feedback after exams.

Failure Redemption: Resit examination or resubmit coursework

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

Normally available to elective visiting or exchange students. There are no pre- or co-requisites for this module.

GEG140 Project and Methods

Credits: 20 Session: 2022/23 January-June

Pre-requisite Modules:

Co-requisite Modules:

Lecturer(s): Dr RG Smith, Prof T Murray, Dr JAB Rosette

Format: 23 hrs of either a human geography or physical geography project and 12 hrs field data skills and critical evaluation for all students

Delivery Method: Lectures, Practicals (on campus) and Fieldwork (local, Gower, Swansea City Centre)

Module Aims: This module involves training in fieldwork and GIS skills for both human and physical geographers. In part 1, students can choose from a physical or human geography project option:

Part 1: Physical Geography
In the physical geography component we will look at sea-level change and its impacts on communities and ecosystems. During classroom sessions we will consider the causes of sea-level change and how it is measured. We use the technique of Stakeholder Analysis to look at the economic and social impacts of sea-level change in different regions. We will then undergo local visits to explore the potential impacts of sea level to our locality and on our coastal university. We'll look at both urban and rural environments and different mitigation policies that may be used.

Part 1: Human Geography
The human geography project focusses on Cities and Photography. Students will investigate the use of photography through three Visual Methodologies: Photo-Documentation, Photo-Elicitation, and Photo-Essays. Students will take part in a photo documentation workshop and group photography fieldwork in Swansea City Centre. They will also complete a photo essay aided by group discussion to select concept, theme, whether analytical or evocative photographs (or both), and dicussion of the links between practice and visual methodologies literature.

Part 2: Field data collection and critical analysis skills.
During part 2 of this module, students will expand on the knowledge gained previously. This will combine investigations of our world in three dimensions, for which students will use photographs captured themselves to construct a 3D model. Students will learn about and apply other 3D analysis techniques to estimate environmental parameters that they will compare with their field data. They will also contribute to a citizen science initiative using a mobile app for coastal transition zones at risk from sea level change at our University campuses. Using these data collected and analysed during the semester, students will gain insight into sources of uncertainty among datasets, enabling them to critically examine the concept of ground 'truth'.

Module Content: 1) Physical Geography Project

Introduction lecture
Gower Fieldtrips
PC practical workshops

2) Human Geography Project

Lectures
Cities and Photography
Making Photographs as a part of a research project: Three Visual Methodologies: Photo-Documentation, Photo-Elicitation, and Photo-Essays
Photo Documentation Workshop 1
Photo Documentation of the Built Environment
Urban Decline, Decay, Ruins, Regeneration
Development of Swansea City Centre Shooting Script
Group Photography Fieldwork in Swansea City Centre
Photo Documentation Workshop 2
Group Discussion/Image Selection/Narrative Writing Ideas/Link to Literature
Photo Essay Workshop 1
Urban Photo Essay
Group Discussion to select concept, theme, whether analytical or evocative photographs (or both), etc. Understanding of links to literature.

3) GIS Project

Mapping, Spatial Data and GIS
Spatial data and Geographic Information Systems
Exploring how maps and spatial analysis can help us to understand and monitor our world.
Considering the use of maps to analyse the environment and share the results in the media.
Exploring GIS software (arc Map, QGIS) and taking your first steps in displaying spatial data.
Learn and practice working with different data formats (vector and raster).
Learn how to create maps and include key elements of a map (scale bar, legend, graticule). Allow viewers to interpret your map and understand your results.
Case studies include Forest inventory and land use mapping and Global cities population and distribution

Intended Learning Outcomes: By the end of this module, students will have demonstrated the ability to:

• Collect, manipulate, analyse and present geographical data;
• Demonstrate competence in fundamental techniques that are used in the field for description, measurement and inference in Quaternary studies OR visual analysis of photography in human geography;
• Show key skills in Mapping, Spatial Data and GIS
• Discuss how maps and spatial analysis can help us to understand and monitor our world.

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

Assessment Description: 1 x fieldwork report or photo documentation task / photo essay
1 x GIS report

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

Assessment Feedback: Students will recieve written feedback on their coursework and oral feedback from their tutor about their performance.

Failure Redemption: Resit all failed elements

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

Module code reserved by r.muxworthy on 22/02/2019 11:46:15