



**Swansea University  
Prifysgol Abertawe**

**FACULTY OF SCIENCE AND  
ENGINEERING**

**UNDERGRADUATE STUDENT  
HANDBOOK**

**Year 0 (FHEQ LEVEL 3)**

**BSC BIOLOGY  
FOUNDATION PROGRAMME**

**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**



<b>Faculty of Science and Engineering</b>	
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
<b>School of Biosciences, Geography and Physics</b>	
<b>Head of School: Siwan Davies</b>	
School Education Lead	Dr Laura Roberts
Head of Biosciences	Professor Geoff Profitt
Biosciences Programme Director	Dr Wendy Harris
Year Coordinators	Year 1 – Dr Chris Lowe Year 2 – Dr Kevin Arbuckle Year 3 – Dr Ed Pope MSc – Dr Aisling Devine

## 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](mailto: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/>

# FIELD COURSES AND PRACTICALS

## Year 2 Local Residential Field courses

After successful completion of Year 1, you will take a compulsory Year 2 local residential field course in your subject area usually in early September, before induction week. Information regarding finals dates is sent early in the second semester.

## Practical Attendance

Modules have up to 3 weeks of practical work and, when a module is running, students taking that module will work in a laboratory for approximately 3 hour slots on **one** day (time of practical may vary between modules). The practicals for BIO – prefixed modules will take place in **Laboratory 115 or 118** in the Wallace Building or **Laboratory M100** in the Margam Building. There are also some computer-based practical classes, please refer to your timetable for the date and location of these. Your lecturer will inform you of the correct session to attend. **You can only attend the session that you have been allocated.**

It is particularly important that students should attend at the start of each practical class as it is then that the work for the session is explained and late arrival may well jeopardise your chance of understanding the content of that class.

The lecturers delivering the practicals will inform students how practical work should be submitted for assessment. Sometimes you will be told that practical work for marking will be collected from you at the end of the laboratory class. For other practicals you will submit onto Turnitin through Canvas.

**Attendance at practical classes is compulsory, and absence must be covered by Extenuating Circumstances or will result in a Zero for associated assessment.**

For practical classes each student will require the following:-

- (a) A **laboratory overall**; students are expected to wear an overall during practical classes and will **not** be admitted to a class unless they do so.
- (b) **Safety glasses/goggles**; these must be brought to all practical classes and must be worn unless the lecturer in charge allows dispensation.
- (c) **Your own paper** and **pencils** etc.
- (d) **Dissection kit**: standard dissection kit containing forceps, seekers, scalpels, scissors and a hand lens.

**If you do not already have them, laboratory coats, safety glasses and dissection kits should be purchased before the start of your practical.**

## USE OF ANIMALS IN TEACHING - POLICY STATEMENT

We ensure a responsible and ethical policy in the use of living or dead animals in teaching. We ensure a minimum number of animals will be used in any class that requires them and always seek alternatives to the use of animals where possible. The use of live animals for teaching is reconsidered at regular intervals and subject to strict ethical reviews. In addition to conformity to Home Office regulations, we endorse an approach which emphasises the importance of avoiding trivial exercises, minimising stress, choosing the right species, ensuring correct sample size and minimising durations of experiments.

There are clear moral and technical distinctions between vivisection (surgery on live animals) and dissection and these should be appreciated. In Swansea, **no** student practicals involve vivisection as the term is generally understood, however a small of practicals may involve the use of dead animals. Students and staff are expected to handle animal material respectfully and sparingly.

The use of animal material **is not** a necessary component in the training of Bioscientists and we **do** use alternatives (videos, models and museum material) wherever possible. **Alternative assessments will be made available if you choose not to participate.**



## Year 0 (FHEQ Level 3) 2022/23

### Biology BSc Biology[C101]

#### Compulsory Modules

Semester 1 Modules	Semester 2 Modules
<b>BIO012</b> Foundation Biology 20 Credits Dr KAR Rose	<b>BIO016</b> Molecular Biology and Biochemistry 20 Credits Dr MPS Gwilliam
<b>CH-012</b> Foundational Scientific Skills 20 Credits Dr DW Forman/Prof SG Bott	<b>BIO019</b> Techniques in Ecology and Biogeography 20 Credits Dr WE Harris/Dr KJ Ficken
<b>Total 120 Credits</b>	

#### Optional Modules

Choose exactly 40 credits

<b>CH-005</b>	Elementary Chemistry	Prof SG Bott	TB1	20
<b>CH-010</b>	Reactions and Products	Prof SG Bott	TB2	20
<b>GE-007</b>	Foundation Physical and Environmental Geography	Prof NJ Loader/Dr NJ Felstead	TB1	20
<b>GE-008</b>	Foundation Human Geography.	Dr JF Maddern	TB2	20

# BIO012 Foundation Biology

**Credits: 20 Session: 2022/23 September-January**

**Pre-requisite Modules:**

**Co-requisite Modules:**

**Lecturer(s):** Dr KAR Rose

**Format:** lecture (87%)  
practical (13%)  
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, practicals)

**Module Aims:** This module will provide the learner with a detailed and holistic overview of life on earth and includes a range of subject matter including evolution, cell biology, anatomy and physiology, as well as behaviour, ecology and conservation. The module is supported by one practical session that aims to build upon core skills required within the field of biology including scientific drawing, species identification, data handling and report writing.

**Module Content:** The module will comprise of the following lecture material:

- Introduction & Philosophy of science
- Evolution
- Taxonomy
- Plant cells
- Animal cells
- Basic plant structure
- Basic plant physiology
- Basic animal anatomy
- Basic animal physiology
- Animal behaviour
- Population Ecology
- Community Ecology
- Conservation

The module also includes one practical session on barn owl dietary analysis

**Intended Learning Outcomes:** At the end of this module students will be able to demonstrate a knowledge of:

1. The processes involved in evolution
2. The structure and function of animal and plant cells
3. The structure and function in plant and animal anatomy and physiology
4. The different levels of organisation in biology (cellular to whole organism)
5. The mechanisms involved in animal behaviour and adaptation
6. Ecological systems and how to conserve them

**Assessment:** Examination (50%)  
Coursework 1 (20%)  
Coursework 2 (15%)  
Coursework 3 (15%)

**Assessment Description:** Assignment 1. Basic plant identification  
Assignment 2. Freshwater invertebrate identification and ecology  
Assignment 3

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

**Assessment Feedback:** Assignments - written feedback provided for each student, general overview provided during the feedback lecture, written generic overview provided on BlackBoard

Formal examination - written generic overview of exam performance provided on Canvas

**Failure Redemption:** Re-submission of continual assessment, re-examination (MCQ examination),

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

Not available to visiting or exchange students with exception of those within the College's existing exchange programmes

# BIO016 Molecular Biology and Biochemistry

**Credits: 20 Session: 2022/23 January-June**

**Pre-requisite Modules:**

**Co-requisite Modules:**

**Lecturer(s):** Dr MPS Gwilliam

**Format:** 15 hours lectures,  
9 hours practical sessions (3 x 3 hours), Formative practical sessions (5 hrs),  
1 hour revision session  
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, practicals and e-learning)

**Module Aims:** This module introduces the identification and role of essential macromolecules within a cell and their basic biochemical processes. Lectures and laboratory-based practicals will explore the core concepts of molecular biology and the practical application of molecular techniques. Lectures will cover the fundamental cellular chemistry that is necessary to understand the molecular nature of cells and the processes involved in maintaining life. Practical will develop this learning to investigate specific molecular applications utilised in real-life situations, and also provide context to how and why gene regulation occurs.

**Module Content:** This module will use a combination of lectures (20 x 1 hour) and practicals (3 x 3 hours). Practical will use specific examples highlighted in the lectures to put the theory-based learning into a real-world context. The topics covered will explore how molecular tools can be used to in crime investigations, identification of disease causing agents, assessing human/animal relatedness, sources of contamination and more, and how genes are regulated and why.

The syllabus is split into four major themes:

1. Molecules: the stuff of life – Chemistry, carbohydrates, proteins, lipids, DNA and RNA
2. The working cell – Metabolism, cellular respiration and photosynthesis
3. Molecular Genetics – DNA synthesis, transcription, translation and gene regulation
4. Tools of Molecular Biology – Recombinant DNA technology, molecular techniques and genomics.

Practical classes:

1. Will investigate different methods to identify macromolecules
2. Will apply concepts of gene regulation and biochemistry. You will perform a Dinitro Salicylic Acid (DNS) method and a calibration curve for carbohydrates which will allow you to estimate the amount of sugar in different solutions; you will also relate these results with the type/amount of enzymes produced under specific substrates
3. Will apply the principles of restriction analysis and electrophoresis to cleave, separate and visualize DNA fragments. We will see how these techniques can be combined to obtain a DNA fingerprint and undertake our own crime scene investigation.

Specific skills employed include: Aseptic technique, molecular techniques, micropipette handling, identification of substances via basic chemistry techniques, generating and devising how to present data to allow critical analysis.

E-learning

Additional resources provided on Blackboard.

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

- LO1) Identify essential macromolecules within a cell environment
- LO2) Show an understanding of the role of the macromolecules and their regulating mechanisms
- LO3) Show an understanding of cell structure and metabolism
- LO4) Show an understanding of the most common techniques used in molecular biology

**Assessment:** Examination (50%)  
Coursework 1 (36%)  
Coursework 2 (14%)

**Assessment Description:** Coursework will consist of 3 practical reports and an online virtual lab test.  
Exam - MCQ (75 questions)

CW1 - 15% - Macromolecules lab report

CW2 - 10% Blackboard test

CW3 - 15% CSI lab report

CW4 - 10% Gene regulation lab report

**Moderation approach to main assessment:** Not applicable

**Assessment Feedback:** Formative feedback on coursework and examinations. Contact lecturer as required.

**Failure Redemption:** Re-submission of coursework, re-sit of examination

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

Not available to visiting or exchange students with exception of those within the school's existing exchange programmes.

# BIO019 Techniques in Ecology and Biogeography

**Credits: 20 Session: 2022/23 January-June**

**Pre-requisite Modules:**

**Co-requisite Modules:**

**Lecturer(s):** Dr WE Harris, Dr KJ Ficken

**Format:** 23 hours lectures  
2 hours revision sessions  
16 hours practical sessions (4 x 4 hours)

**Delivery Method:** Blended learning (lectures, practicals and e-learning)

**Module Aims:** This module builds on the principles of ecology and biogeography, incorporating appropriate terminology and techniques required for field work. You will learn about the major biomes and their characteristics, and the techniques to survey the plants and animals within them. Alongside these topics, you will develop key skills to support you working safely and competently in the field, and the knowledge to plan and carry out robust surveys.

**Module Content:** Direct teaching (approximate time allocation in brackets)

Introduction to ecological studies (1 hour)

The distribution of ecological communities over space and time (1 hour)

Key terrestrial and aquatic biomes and their associated characteristics (3 hours)

Prior considerations, including health and safety in the field, preparing risk assessments, recording keeping (1 hour)

An introduction to wildlife legislation (1 hour)

Using maps and GPS (1 hour)

Managing your data (1 hour)

Monitoring site characteristics (1 hour)

Sampling static organisms (1 hour)

Sampling mobile organisms (1 hour)

Survey techniques for specific animal groups (6 hours)

Examining community structure (1 hour)

Assessment workshops (3 hours)

Revision session (2 hours)

Practicals

The course will be supplemented by 4 practical sessions (4 x 4 hours). This will include:

- Orienteering around campus; aquatic invertebrate surveys; terrestrial invertebrate and terrestrial mammal surveys; dune succession survey

Attendance at practicals is mandatory for successful completion of this module

E-learning

Additional resources provided on Canvas will include relevant articles, useful websites, and interactive quizzes to support revision and learning

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

LO1) Discuss the basic principles of ecology and biogeography

LO2) Outline the key terrestrial and aquatic biomes and their associated characteristics

LO3) Identify the factors that limit geographic range of organisms, considering dispersal and mechanisms of movement

LO4) Be familiar with how the distribution of ecological communities may change over space and time.

LO5) Use maps and GPS effectively, record grid position

LO6) Design a simple field experiment using appropriate experimental design; choose survey techniques for a range of plant and animal groups

LO7) Choose and use basic keys/guides to identify species

LO8) Keep accurate records in the field and work safely in various environments

LO9) Develop skills required to write a scientific report to a professional standard

<b>Assessment:</b>	Examination (50%) Coursework 1 (10%) Coursework 2 (5%) Coursework 3 (15%) Coursework 4 (20%)
<b>Assessment Description:</b>	Coursework 1 - 5% Orientation activity quiz Coursework 2 - 10% Succession practical report Coursework 3 - 15% Aquatic invertebrates practical report (500 words) Coursework 4 - 20% Terrestrial invertebrates and mammal survey report (500 words)
	Exam - MCQ (75 questions)
<b>Moderation approach to main assessment:</b>	Second marking as sampling or moderation
<b>Assessment Feedback:</b>	Direct general feedback during lectures and practical sessions, general feedback provided via Canvas (due to term ending), formal feedback session to discuss examination results
<b>Failure Redemption:</b>	Re-submission of coursework, re-sit of examination
<b>Additional Notes:</b>	Delivery of both teaching and assessment will be blended including live and self-directed activities online and on-campus.
	Not available to visiting or exchange students.

## CH-005 Elementary Chemistry

**Credits:** 20 **Session:** 2022/23 September-January

**Pre-requisite Modules:**

**Co-requisite Modules:**

**Lecturer(s):** Prof SG Bott

**Format:** 44 hours of workshops and lectures  
156 hours of independent study and assessment preparation

**Delivery Method:** Flipped content, active classrooms, workshops, peer-led learning.

**Module Aims:** This module will introduce students to the concept of atomic structure and electron configuration, inter- and intra- molecular forces, bonding and molecular structures. Through a series of interactive workshops, students will apply this knowledge in order to be able to describe and explain periodicity, the properties of groups and the observed trends, and to predict the shape and simple structures of molecules and ions. Students will also be introduced to acids, bases and pH, Avogadro's constant, simple molecular calculations and the concept of an ideal gas. Students will also become familiar with organic molecules, their functional structures and their uses. This module will form the bridge to help students to transition from GCSE and A-level Chemistry, building a strong foundation for Chemistry at Level 4.

**Module Content:** - electromagnetic spectrum and atomic spectra

- atomic structure and electron configuration;
- molecular formulas;
- the mole and molar mass
- organic molecules and functional groups;
- trends across and down the periodic table;
- predicting structure and shapes of simple molecules and ions;
- inter- and intra-molecular forces and bonding;
- states of matter and phase diagrams;
- gas laws and the Ideal Gas equation.
- acids, bases
- molar calculations of concentration

**Intended Learning Outcomes:** By the end of this module, students should be able to:

- describe atomic structure and electron configuration and use this to explain periodicity, inter and intra-molecular interactions and bonding, as well as simple molecular and atomic structures;
- perform basic molar calculations;
- draw simple organic molecules and recall functional groups
- critically evaluate and solve problems on chemical concepts

**Assessment:** Online Multiple Choice Questions (50%)  
Assignment 1 (50%)

**Assessment Description:** Examination  
Workshop and online quizzes portfolio

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

**Assessment Feedback:** Students will receive verbal, written and online feedback, both formative and summative and at regular intervals.

**Failure Redemption:** A suitable alternative supplementary assessment will be provided, in line with University policy.

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

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# CH-010 Reactions and Products

**Credits: 20 Session: 2022/23 January-June**

**Pre-requisite Modules:**

**Co-requisite Modules:**

**Lecturer(s):** Prof SG Bott

**Format:** 44 hours of workshops and classes  
156 hours of independent study and assessment preparation  
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

Flipped content, active classrooms, workshops, peer-led learning.

**Module Aims:** This module will introduce students to theories and laws that underpin our knowledge of atomic and molecular interactions/reactions. It will start with discussions and calculations for chemical equations. Thermodynamics will include equilibrium, enthalpy, entropy, Gibbs Free Energy, calorimetry and Hess' Law (including Born-Haber cycles and Le Chatelier's Principle). Simple kinetics and rate laws including catalysis will be introduced. A variety of simple and fundamental organic reactions will be introduced including but not limited to electrophilic and nucleophilic addition and substitution. This module will form the bridge to help students to transition from GCSE and A-level Chemistry, building a strong foundation for Chemistry at Level 4.

**Module Content:** Chemical Equations and Stoichiometry

Calorimetry, Enthalpy, Hess' Law, Born-Haber cycles

Rate of reaction and rate laws, the Arrhenius equation, simple Collision theory

Equilibrium including Le Chatelier's Principle (including workshop on the quadratic equations)

Acid-base reactions including titrations and buffer calculations

Entropy;

Gibbs free energy

Oxidation, reduction and redox reactions

Electrochemical potential and Galvanic cells

Electrolysis

Nucleophilic addition and substitution reactions

Electrophilic addition and substitution reactions

Elimination reactions

Organic redox reactions

**Intended Learning Outcomes:** By the end of this module, students should be able to:

- Perform standard stoichiometric calculations
- Define and use the standard enthalpy of combustion and formation, molar enthalpy changes (calorimetry) and Hess's Law.
- Construct lattice enthalpies and enthalpies of hydration.
- Apply the concept of entropy to explaining various reaction properties
- Combine enthalpic and entropic considerations to predicting the spontaneity of reactions
- Calculate the Gibbs free energy of a reaction using multiple procedures
- Use collision theory to explain why small increases in T can increase a rate of reaction and to understand why pressure and concentration can effect the rate of reaction.
- Apply simple mechanistic considerations (reaction coordinate, intermediate, slow step, catalysis)
- Perform calculations using the rate equation and explain qualitatively how changes in T affect the rate constant.
- Use Le Chatelier's Principle to qualitatively predict the position of equilibrium, when T, P or C is changed.
- Perform calculations with  $K_c$  and  $K_p$  and derive partial pressures from the mole fraction and total pressure.
- Perform multiple types of calculations associated with acids and bases
- Construct, balance and apply redox reactions
- Determine the potential of electrochemical reactions
- Predict the products of electrolytic processes
- Predict the products and explain mechanisms of simple organic reactions
- Critically evaluate and solve problems on chemical concepts

**Assessment:** Assignment 1 (50%)  
In class test (Invigilated on campus) (50%)

**Assessment Description:** Examination (in-class)  
Workshop and online quizzes portfolio

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

**Assessment Feedback:** Students will receive verbal, written and online feedback, both formative and summative and at regular intervals.

**Failure Redemption:** A suitable alternative supplementary assessment will be provided, in line with University policy.

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

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## CH-012 Foundational Scientific Skills

**Credits:** 20 **Session:** 2022/23 September-January

**Pre-requisite Modules:**

**Co-requisite Modules:**

**Lecturer(s):** Dr DW Forman, Prof SG Bott

**Format:** 30 hours of workshops  
4 drop-in support sessions (2 hours each)

**Delivery Method:** A composite of workshops supported by blended and flipped learning

**Module Aims:** This module is designed to develop the core analytical skills of foundation year students in Biosciences, Chemistry and Geography

The module focuses on the elements of data analysis and scientific communication, drawing to together these important skills to develop a critical approach to learning in science.

Students will be guided through the process of researching and writing a literature review on a pertinent topic in their subject. Workshops will focus on the different stages of research and writing and will be supported in developing these skills through group activities and short weekly tests. Students will also develop their literature review topic into a scientific poster - a valuable skills for future academic study. In the second part of this module, students continue to develop analytical skills through the introduction of experimental design and hypothesis testing as well as some of the key methods of presenting and analysing data.

All coursework will be submitted electronically via TURNITIN to ensure compliance with the University's policies on plagiarism.

**Module Content:** The material is divided into three, sometimes overlapping, areas:

Maths:

Numbers

Roots

Exponent

Algebra

Graphs

Data and Analysis

What are data

Introduction to Excel

Displaying data

Descriptive and inferential statistics

Introduction to SPSS

Scientific Communication

Scientific writing and presentation

Find and using literature

Appropriate referencing

Academic misconduct

Introduction to literature reviews

Poster presentations

**Intended Learning Outcomes:** Students will be able to:

LO1 - Search for, describe, summarise and clarify scientific information

LO2 - Format, reference and structure a scientific review

LO3 - Summarise information through the production of a scientific poster

LO4 - Discuss and implement the scientific method and hypothesis formulation

LO5 – Recognise, rearrange, use and solve simple algebraic problems involving different functions of  $x$ ;

LO6 - Distinguish variables and generate different types of data (counts, percentages)

LO7 - Generate frequency distributions and report data in an appropriate form (graphs and tables)

LO8 - Be able to comprehend descriptive and inferential statistics, and perform simple statistical analyses

**Assessment:** Assignment 1 (20%)

Assignment 2 (25%)

Assignment 3 (25%)

Assignment 4 (15%)

Assignment 5 (15%)

**Assessment Description:** Assignment 1 (20%) - Scientific Poster

Assignment 2 (25%) - Literature Review

Assignment 3 (25%) - Displaying data report

Assignment 4 (15%) - Data analysis report

Assignment 5 (15%) - Maths online quizzes

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

**Assessment Feedback:** Individual written feedback on literature review

Individual written feedback on poster

Individual feedback on displaying data report

Individual feedback on data analysis report

Automatic feedback on the maths quizzes

**Failure Redemption:** A suitable alternative supplementary assessment will be provided, in line with University policy.

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

Module not available to visiting or exchange students with exception of those within the school's existing exchange programme

<b>GE-007 Foundation Physical and Environmental Geography</b>	
<b>Credits: 20 Session: 2022/23 September-January</b>	
<b>Pre-requisite Modules:</b>	
<b>Co-requisite Modules:</b>	
<b>Lecturer(s):</b> Prof NJ Loader, Dr NJ Felstead	
<b>Format:</b>	20 hours (online delivery lecture and practical classes) covid-19 restrictions permitting. 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.
<b>Delivery Method:</b> 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	
Delivery of course through on-line and on campus dependent upon covid-19 restrictions (synchronous and asynchronous material).	
Delivery of course through outdoor face-to-face practical classes – these activities will be formative in nature and are dependent upon UKGOV, WG and University Health and safety guidance – and appropriate timetabling.	
<b>Module Aims:</b> This module complements topics taught in the Foundation Human Geography module (GE-008), to give an understanding of physical geography and the environment.	
The module considers the impacts of physical geography processes on human habitation, and how humans might mitigate against the effects of nature's extreme events. It also examines the complex issues surrounding human impacts on the landscape.	
Foundation Physical & Environmental Geography will pave the way for students to study Geography at Level 4 (Year 1).	
<b>Module Content:</b> GE-007 uses the following broad themes/issues to explore physical geography systems and processes, and human impacts on - and relationships with - the natural environment:	
<ul style="list-style-type: none"> <li>- Coastal processes</li> <li>- Weather and climate</li> <li>- Quaternary Research / the Anthropocene</li> <li>- Rivers</li> <li>- Geomorphology</li> <li>- Desertification</li> <li>- Earth science</li> <li>- Renewable energy</li> <li>- Erosion and weathering</li> </ul>	
<b>Intended Learning Outcomes:</b> By the end of this module, the student should be able to:	
<ul style="list-style-type: none"> <li>- Understand and describe key physical geography systems and processes;</li> <li>- Identify and give examples of features and landforms associated with key physical geography systems and processes;</li> <li>- Demonstrate an awareness of the complex issues that surround human interactions with environments; and</li> <li>- Show an appreciation of issues involved in hazard mitigation and landscape management.</li> </ul>	
<b>Assessment:</b>	Assignment 1 (34%) Assignment 2 (33%) Assignment 3 (33%)
<b>Assessment Description:</b> Assessment revised to comprise: 4 x Short answer written questions (comprising c. 4-5 questions) set throughout the course Best three marks to comprise the module mark	
<b>Moderation approach to main assessment:</b> Second marking as sampling or moderation	
<b>Assessment Feedback:</b> Generic feedback on coursework via lectures synchronous and possibly Canvas. Individual feedback on exam performance via tutorial system.	
<b>Failure Redemption:</b> Resit examination in August (essay)	

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

Only available to students enrolled on Science Foundation Year in Geography.

# GE-008 Foundation Human Geography.

**Credits: 20 Session: 2022/23 January-June**

**Pre-requisite Modules:**

**Co-requisite Modules:**

**Lecturer(s):** Dr JF Maddern

**Format:** 20 hours of 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 delivered on campus.

**Module Aims:** An introduction to human geography concepts and themes from the perspective of contemporary research. The material covered builds on the WJEC A-level syllabus and focuses on the areas of development, globalisation and sustainability. Development is a continuing concern of geographers while the economic, political, social and environmental aspects of Globalisation increasingly impact on people and places. Themes relating to Sustainability (Sustainable Water, Sustainable Energy, Sustainable Population and Sustainable Cities) draw attention to the complexities and the management of a sustainable planet. The course provides a bridge between A-level and University level study.

**Module Content:** Outline of typical lecture topics:

Introduction

Development

- development as a value-laden and contested concept
- development as state and process
- introduction to key development theories

Globalisation

- economies aspects
- political aspects
- social aspects
- environmental aspects

Sustainability

- Sustainable Water
- Sustainable Energy
- Sustainable Population
- Sustainable Cities

Summary and Revision Session

**Intended Learning Outcomes:** The module is designed to encourage students to:

- develop and apply their understanding of geographical concepts and processes to understand and interpret our changing world.
- develop their awareness of the complexity of interactions within and between societies, economies, cultures and environments at scales from local to global

By the end of this module, the student should be able to:

- extend their understanding of geographical ideas, concepts and processes
- identify and analyse the connections between the different aspects of geography
- analyse and synthesise geographical information in a variety of forms and from a range of sources
- consider new ideas and developments about the changing nature of geography in the 21st century;

<b>Assessment:</b>	Participation Exercise (10%) Coursework 1 (40%) Examination (50%)
<b>Assessment Description:</b>	1) Participation exercise  During each week students should prepare for and attend the seminars which align to module themes. To gain the marks for participation, students should sign up to partake in and lead one seminar with a 10 minute presentation addressing the questions in the seminar preparation sheet, which includes doing the preparatory reading.  2) The essay is a 1,500 word piece of work in which students choose 1 out of 5 questions to answer, which relate to the course themes. Students are able to take advantage of the opportunity to get formative feedback on an essay draft, several weeks prior to submitting their essay. They are also supported through 4 workshop sessions on academic writing and referencing skills delivered by CAS.  3) A MCQ exam is provided to students during the May / June exam period using inbuilt Canvas quiz facilities. Students are given an opportunity to practice multiple choice quizzes in the last week of term during a dedicated revision session using live, interactive quiz software.
<b>Moderation approach to main assessment:</b>	Not applicable
<b>Assessment Feedback:</b>	Oral feedback on exam performance via the tutorial system in the aligned GE005 module as well as during the seminars for GE008. Written feedback on essay performance via tutorial system. Video feedback is available as an alternative on request.
<b>Failure Redemption:</b>	Resit examination in August exam period.
<b>Additional Notes:</b>	Delivery of both teaching and assessment will be blended including live and self-directed activities online and on-campus.  The primary aim of this module is to provide the participants with the relevant background information on human geography which is an essential base for all geographers at degree level. This module is only available to students studying a Foundation Year. Not available to visiting or exchange students.