Swansea University
Prifysgol Abertawe

FACULTY OF SCIENCE AND ENGINEERING

UNDERGRADUATE STUDENT HANDBOOK

YEAR 0 (FHEQ LEVEL 3)

CHEMISTRY

DEGREE PROGRAMMES

SUBJECT SPECIFIC
PART TWO OF TWO
MODULE AND COURSE STRUCTURE
2023-24

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 23-24 academic year begins on 25 September 2023

Full term dates can be found here

DATES OF 23-24 TERMS

25 September 2023 – 15 December 2023

8 January 2024 – 22 March 2024

15 April 2024 – 07 June 2024

SEMESTER 1

25 September 2023 – 29 January 2024

SEMESTER 2

29 January 2024 – 07 June 2024

SUMMER

10 June 2024 – 20 September 2024

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.

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.

At Swansea University and in the Faculty of Science and 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, technical and administrative staff, administrators - I'm sure you will find many friendly helping hands ready to assist you. And make the most of living and working alongside your fellow students.

During your time with us, please learn, create, collaborate, and most of all – enjoy yourself!

Professor David Smith
Pro-Vice-Chancellor and Executive Dean
Faculty of Science and Engineering

Faculty of Science and Engineering	
Pro-Vice-Chancellor and Executive Dean	Professor David Smith
Director of Faculty Operations	Mrs Ruth Bunting
Associate Dean – Student Learning and Experience (SLE)	Professor Laura Roberts
School of Engineering and Applied Sciences	
Head of School	Professor Serena Margadonna
School Education Lead	Professor Simon Bott
Head of Chemistry	Professor Owen Guy
Chemistry Programme Director	Dr Joel Loveridge
Year Coordinators	Year 0 – Professor Simon Bott Year 1 – Dr Joel Loveridge Year 2 – Dr Francisco Martin-Martinez Year 3 – Dr Mariolino Carta Year 4 – Dr Sumati Bhatia

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 8.30am-4pm.

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

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

Call: +44 (0) 1792 295514 (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/

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 23-24 handbooks to ensure that you have access to the most up-to-date versions.
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 0 (FHEQ Level 3) 2023/24
Chemistry
BSc Chemistry[F10F]

Coordinator: Prof SG Bott

Semester 1 Modules	Semester 2 Modules
CH-005 **Elementary Chemistry** **20 Credits** **Prof SG Bott**	**BIO016** **Molecular Biology and Biochemistry** **20 Credits** **Dr MPS Gwilliam**
CH-008 **Methods of Analysis and Detection** **20 Credits** **Prof SG Bott**	**CH-009** **Synthesis and Analysis** **20 Credits** **Prof SG Bott**
CH-012 **Foundational Scientific Skills** **20 Credits** **Prof SG Bott/Dr DW Forman**	**CH-010** **Reactions and Products** **20 Credits** **Prof SG Bott**
Total 120 Credits	

BIO016 Molecular Biology and Biochemistry

Credits: 20 Session: 2023/24 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), two workshop sessions (2x 3 hours)
2 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: BIO016 is currently delivered using a "flipped approach", whereby lecture content is released via the Canvas Digital Learning Platform before the lectures each week. This allows for students to study and fully prepare for 'in-person lectures'. The lectures are delivered less formally allowing for more student- lecturer interaction- including extra activities such as problem solving, practical / computer activities, in-class discussion and quizzes. In person sessions are also recorded and made available (where feasible) for future use by the student on Canvas. Additional self directed learning activities are outlined in the lectures and on canvas each week. Additionally three practical laboratory sessions are run during the module where students can apply their knowledge and develop essential laboratory skills

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. Practicals 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. The workshop sessions explore the applications of molecular biology to wider society exploring topics such as science communication, ethics, vaccines and genetic modification

Module Content: This module will use a combination of lectures (20 x 1 hour) and practicals (3 x 3 hours). Practicals 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 Canvas.

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 1 (50%)
Coursework 1 (16%)
Coursework 2 (16%)
Coursework 3 (18%)

Assessment Description: E1 - 50% MCQ (75 questions in 2 hours)
CW1- 16% Macromolecules lab report
CW2- 16% Gene regulation lab report
CW3- 18% CSI Swansea lab report

Moderation approach to main assessment: Not applicable

Assessment Feedback: Individual written constructive feedback of how to improve the work will be given for each piece of coursework. Contact the lecturer for further feedback by email or discuss after lecture / during 'open office' hours.

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.

CH-005 Elementary Chemistry

Credits: 20 Session: 2023/24 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 intro-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: Examination (50%)
Assignment 1 (25%)
Coursework 1 (5%)
Coursework 2 (5%)
Coursework 3 (5%)
Coursework 4 (5%)
Coursework 5 (5%)

Resit Assessment: Examination (100%)

Assessment Description: -Examination
-Courseworks are biweekly workshops - there are 5 x 5% assignments
-Assignment 1 are weekly on Canvas - there are 10 x 2.5% quizzes.

Moderation approach to main assessment: Moderation by sampling of the cohort

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

Failure Redemption: Resit exam worth 100%

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-008 Methods of Analysis and Detection

Credits: 20 Session: 2023/24 September-January

Pre-requisite Modules:

Co-requisite Modules:

Lecturer(s): Prof SG Bott

Format: 22 hours online workshops
44 hours of practicals
34 hours of assessment preparation
100 hours of independent study
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, on-line workshops, peer-led learning, laboratory/practical work.

Module Aims: This module will introduce students to working in a laboratory environment, including how to work safely, good laboratory practice and how to maintain a good laboratory lab book. In workshops, students will become familiar with different analytical techniques that they will use later during their degree programme and in the work-place and the theory will be reinforced through experiential and applied learning in the laboratory. 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: Practical Laboratory Work:

- Risk assessments;
- Good laboratory practice;
- Keeping a good lab book;
- Basic laboratory techniques;
- Scientific method;
- Writing laboratory reports.

Analytical Techniques (Theory):

- UV-vis spectroscopy;
- Mass spectrometry;
- IR & NMR;

Practicals will include:

- Mixing reagents;
- Making solutions
- analysis of solutions (including UV/vis analysis)
- Spectroscopy of substances (IR, NMR)
- Reactions
- simple organic syntheses

Maths workshop on trigonometry to augment structural material from CH-005.

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

- write a risk assessment for the work that they are undertaking;

- work in a safe manner within the laboratory;

- describe various analytical techniques and their applications;

- be able to write a laboratory report.

- develop and present a short powerpoint slide show

- critically evaluate and solve problems on chemical concepts

- work as part of a team to accomplish experimental and other goals

- apply trigonometry to analysing molecular structure

Assessment: Practical (25%)
Laboratory work (50%)
Presentation (25%)

Assessment Description: Practical exam in January
Presentation (5 minutes) on Visible Spectroscopy lab
Laboratory 1 - data sheet on equipment list
Laboratory 2 - data sheet on reactions lab
Laboratory 3 - data sheet on ester lab
Laboratory 4 - data sheet on liquid organic lab
Laboratory report - on 2-step
Coursework 1 - Reactions minireport
Coursework 2 - Aspirin minireport
Coursework 3 - NMR/IR spectra datasheet

Moderation approach to main assessment: Moderation by sampling of the cohort

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

Failure Redemption: Missed experiments would be made up during make-up lab week. There is no scope for making up in August

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-009 Synthesis and Analysis

Credits: 20 Session: 2023/24 January-June

Pre-requisite Modules:

Co-requisite Modules:

Lecturer(s): Prof SG Bott

Format: 22 hours of online workshops
44 hours of practicals
34 hours of assessment preparation
100 hours of self-led study
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, laboratory/practical work.

Module Aims: This module will build on CH-008 and will reinforce how to work safely, good laboratory practice and how to maintain a good laboratory lab book. In lectures/workshops, students will become familiar with different reactions and analytical techniques that they will use later during their degree programme and in the work-place and the theory will be reinforced through experiential and applied learning in the laboratory. Students will gain an understanding of how chemical synthesis and analyses and used in everyday life. 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: Practical Laboratory Work:

- Risk assessments;
- Good laboratory practice;
- Keeping a good lab book;
- Basic laboratory techniques;
- Data analysis

Practicals will include:

- Precipitation reactions
- Calorimetry;
- Acid-base titrations;
- Kinetics experiments (will be accompanied by workshop on simple calculus)
- Simple organic syntheses
- Redox reactions
- Electricity and electrochemical cells.

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

- write a risk assessment for the work that they are undertaking;

- work in a safe manner within the laboratory;

- describe various analytical techniques and their applications;

- be able to write a laboratory report;

- present results in a suitable manner;

- accurately treat, plot and represent data;

- undertake basic laboratory techniques;

- apply simple calculus to chemical problems

- demonstrate and understanding of commercial testing of products and the use of chemistry applications in everyday life.

- develop and present a short powerpoint slide show

- critically evaluate and solve problems on chemical concepts

- work as part of a team to accomplish experimental and other goals

Assessment: Laboratory work (75%)
Presentation (25%)

Assessment Description: Laboratory reports, data sheets and risk assessments
Video presentations

Moderation approach to main assessment: Moderation by sampling of the cohort

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

Failure Redemption: Missed experiments would be made up during make-up lab week. There is no scope for making up in August

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: 2023/24 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 be 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 nuleophilic 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 Kc and Kp 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 (25%) Examination (50%) Online Class Test (25%)
Resit Assessment:	Examination (Resit instrument) (100%)

Assessment Description: -Examination
-Assignments are biweekly workshops - there are 5 x 5% assignments
-Online quizzes are weekly on Canvas - there are 10 x 2.5% quizzes.

Moderation approach to main assessment: Moderation by sampling of the cohort

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: 2023/24 September-January

Pre-requisite Modules:

Co-requisite Modules:

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

Format: 30 hours of workshop
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 3, 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 - Conduct an effective literature search
LO2 - Describe, summarise and clarify scientific information
LO3 - Identify and articulate the relationships between the literature
LO4 - Format, reference and structure a scientific review
LO5 - Summarise information through the production of a scientific poster
LO6 - Discuss and implement the scientific method and hypothesis formulation
LO7 - Rearrange and solve simple algebraic problems;
LO8 - Recognise and use different functions of x;
LO9 - Distinguish variables and generate different types of data (counts, percentages)
LO10 - Generate frequency distributions and report data in an appropriate form (graphs and tables)
LO11 - Be able to comprehend descriptive and inferential statistics
LO12 - 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 (15%) - Data analysis report
Assignment 4 (25%) - Displaying data report
Assignment 5 (15%) - maths online quizzes

Moderation approach to main assessment: Moderation by sampling of the cohort

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: Redo the failed components

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