Swansea University
Prifysgol Abertawe

FACULTY OF SCIENCE AND ENGINEERING

UNDERGRADUATE STUDENT HANDBOOK

YEAR 1 (FHEQ LEVEL 4)

CHEMISTRY

DEGREE 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 26 September 2022

Full term dates can be found here

DATES OF 22-23 TERMS

26 September 2022 – 16 December 2022

9 January 2023 – 31 March 2023

24 April 2023 – 09 June 2023

SEMESTER 1

26 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 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 Marcella Bassetto Year 2: Dr Francisco Martin-Martinez Year 3: Dr Mariolino Carta Year 4: Dr Joel Loveridge

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
Chemistry

BSc Chemistry[F100,F10F]
BSc Chemistry with a Year Abroad[F106]
BSc Chemistry with a Year in Industry[F101]
MCHEM Chemistry[F123]

Coordinator: Dr M Bassetto

Semester 1 Modules	Semester 2 Modules
CH-122 **Chemical Thinking** **20 Credits** **Dr EJ Loveridge/Prof SG Bott/Dr MR Gill**	**CH-124** **Structure and Bonding 2** **20 Credits** **Dr EJ Loveridge/Prof GN Alexandrowicz/Prof SG Bott**
CH-123 **Structure and Bonding 1** **20 Credits** **Prof SG Bott/Dr M Bassetto**	**CH-126** **Chemical Reactions 2** **20 Credits** **Dr M Bassetto/Prof SG Bott/Dr M Carta/Dr JW Ryan**
CH-125 **Chemical Reactions 1** **20 Credits** **Dr EJ Loveridge/Prof SG Bott**	**CH-127** **Chemical Practice** **20 Credits** **Dr I Mabbett/Prof GN Alexandrowicz/Dr M Bassetto/Prof SG Bott/...**
Total 120 Credits	

CH-122 Chemical Thinking

Credits: 20 Session: 2022/23 September-January

Pre-requisite Modules:

Co-requisite Modules:

Lecturer(s): Dr EJ Loveridge, Prof SG Bott, Dr MR Gill

Format: 30 hours practicals,
36 hours workshops/tutorials,
74 hours independent study,
60 hours preparation for assessment

Delivery Method: Flipped classes, seminars, workshops, peer support, laboratory experiments and online content.

Module Aims: This module will meet the challenge of transition to Higher Education from Further Education. Students will be guided in the essential skills to successfully engage with Chemistry in Higher Education, building competence through guided study in Chemistry in group work, basic laboratory safety and practical skills, record keeping and writing of technical reports, peer tuition, note taking, using and giving feedback, mathematics, data analysis, information handling, and coding.

The module will have a variety of formative assessment opportunities and summative assessments that include writing of technical reports, a presentation, a practical-based assessment, and a reflective account

Module Content: Professional Skills and Conduct:

The scientific method
Fundamental chemical concepts and their application
Cheminformatics – finding, managing and citing information
Specific software skills including chemical drawing software
Risk assessment
Avoiding plagiarism and other inappropriate practice
Professional conduct to underpin University study and employability
Working in teams and networks
How to give and receive feedback

Laboratory skills and good laboratory practice:

Elementary synthetic chemistry techniques
Appropriate use of glassware and equipment
Appropriate handling of different substances
Measurement and spectroscopy
Errors and uncertainties
Precision and accuracy
Report writing and keeping a lab book

Mathematics to support chemistry content throughout course, including:

Dimensional analysis and rearrangement of equations
Sketching functions
Straight line graphs
Indices and powers
Exponents and logarithms
Non-linear graphing
Vectors
Trigonometry
Calculus – differentiation
Calculus – integration
Complex numbers

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

Critically analyse their current understanding

Reflect on their intellectual development and identify strategies for continuous development thereof

Apply mathematical skills to theory and for analysis

Identify experimental techniques and evaluate which to use under different conditions

Demonstrate an understanding of the limitations of measurement and apply statistical methods in the consideration of uncertainties

Assess hazards and risks associated with experimental work

Develop appropriate strategies to mitigate risk

Keep accurate and timely records of laboratory experiments

Analyse experimental results in light of theory

Prepare technical reports

Identify, use and reference appropriate information sources for inclusion in academic writing

Identify plagiarism and take steps to avoid it

Assessment:
Coursework 1 (5%)
Coursework 2 (5%)
Presentation (20%)
Practical (25%)
Class Test 2 - Held under exam conditions (25%)
Laboratory work (20%)

Assessment Description: Laboratory practical assessment
In-class test taken simultaneously with the laboratory practical assessment
Group presentation
Laboratory work
Laboratory report
On-going coursework

Due to the resource demands, failure cannot be redeemed for the laboratory activities.

The Laboratory component must be passed (40%) in order to pass the module

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

Assessment Feedback: Students will receive regular targeted feedback on their work through verbal, written and online media. Students will also be trained in self-reflection and peer support to enhance the student-generated feedback. Students will also be supported in making best use of feedback available.

Failure Redemption: A suitable supplementary attempt will be permitted on relevant assessment in line with University policy.

Due to the resource demands, failure cannot be redeemed for the laboratory activities.

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 S. Bott on 15/12/2016 11:01

CH-123 Structure and Bonding 1

Credits: 20 Session: 2022/23 September-January

Pre-requisite Modules:

Co-requisite Modules: CH-122

Lecturer(s): Prof SG Bott, Dr M Bassetto

Format: 30 hours practicals,
36 hours classes/workshops
74 hours independent study,
60 hours preparation for assessment

Delivery Method: Flipped content, online and F2F active classrooms and workshops, tutorials, peer-led learning, practicals

Module Aims: This module will introduce students to the fundamentals of atomic structure, the consequences for forming bonds and the resulting molecular structures. This will introduce to them the concepts of orbitals, shapes of molecules, and how these may be identified through spectroscopy. Experience gained through looking at simple diatomics and polyatomics will be extended to the structures of organic and inorganic molecules and to intermolecular interactions affecting macroscopic states of matter.

This module will build on existing understanding and will employ mathematics taught in other modules (CH-122) to conceptualise material taught in this module.

The module will have a variety of formative assessment opportunities and summative assessments that include writing of technical reports, a presentation, quizzes, workshops, and an exam.

Module Content: Introduction to atomic structure and spectroscopy

•Atomic Spectra incl. Rydberg formula*
•Wave/particle duality*
•Schrödinger equation and the wavefunction (qualitative introduction)*
•Quantum numbers, Energy levels (qualitative)*
•Periodic properties of atoms
•Internal energy of molecules (rot, vib, elec)

Introduction to molecular structure and spectroscopy

•VSEPR
•Bonding and hybridisation
•Molecular Orbital Theory of simple species
•Organic molecules – structures, representations
•Organic nomenclature and functional groups
•Isomerism (structural/geometric; cis/trans and E/Z; optical)
•Conformational equilibria (alkanes and cycloalkanes) and representations
•Introduction to coordination compounds
•IR spectroscopy (functional groups, vibration modes, bonds to H, bond order)

States of matter

•Kinetic theory of gases
•Real gases
•Intermolecular interactions, hydrogen bonds; physical properties
•Phase diagrams
•Phase transitions

Application to experimental results

Intended Learning Outcomes: By the end of this modules, students will be able to

Demonstrate a qualitative understanding of modern atomic structure theory

Detail the electron configuration of atoms and describe and predict trends in atomic properties

Predict, describe and draw the three dimensional structure of inorganic and organic compounds

Predict the reactivity and stability of organic molecules based on structure

Explain the origin of spectroscopic features and use this to interpret spectroscopic data.

Use the kinetic theory of matter to describe phases and relate to physical properties of different substances

Explain origin of intermolecular forces and relate to physical properties of different substances

Further identify experimental techniques and evaluate which to use under different conditions

Assessment:
Examination 1 (55%)
Group Work - Presentation (15%)
Laboratory work (20%)
Coursework 1 (5%)
Coursework 2 (5%)

Assessment Description: Examination
Presentation
Laboratory work
Laboratory report
Weekly assessments (listed above in monthly blocks)

Due to the resource demands, failure cannot be redeemed for the laboratory activities.

The Laboratory component must be passed (40%) in order to pass the module

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

Assessment Feedback: Students will receive regular targeted feedback on their work through verbal, written and online media. Students will also be trained in self-reflection and peer support to enhance the student-generated feedback. Students will also be supported in making best use of feedback available.

Failure Redemption: A suitable supplementary attempt will be permitted on relevant assessment in line with University policy.

Due to the resource demands, failure cannot be redeemed for the laboratory activities.

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 S. Bott on 15/12/2016 11:01

CH-124 Structure and Bonding 2

Credits: 20 Session: 2022/23 January-June

Pre-requisite Modules: CH-122; CH-123

Co-requisite Modules: CH-126

Lecturer(s): Dr EJ Loveridge, Prof GN Alexandrowicz, Prof SG Bott

Format: 30 hours practicals,
36 hours online
74 hours independent study,
60 hours preparation for assessment

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 classes, seminars, workshops, peer support, laboratory experiments and online content.

Module Aims: Building on Structure and Bonding 1 (CH-123), this will extend the theoretical underpinning for atomic and molecular structure and will address more advanced examples from organic and inorganic chemistry as well as macroscopic systems.

The content of this module will require knowledge developed in prior modules as well as independent reading outside scheduled sessions.

The module will have a variety of formative assessment opportunities and summative assessments that include writing of technical reports, a presentation, quizzes, workshops, and an exam.

Module Content: Quantum Chemistry

• Classical Newtonian motion (force, momentum, work, energy and differential equations).
• Waves (wave concepts, equations, solutions and interference effects)
• Classical vibrating molecules (the harmonic oscillator).
• Rotational motion concepts.

Molecules

• Tautomerism, delocalization, resonance, aromaticity
• Effect of delocalisation of spectral properties
• Coordination compounds
• Different types of ligands
• Coordination compound isomerism
• Crystal Field Theory
• Coordination Compound spectral and magnetic properties
• Biochemical molecules: proteins, fats, nucleic acids, sugars and polysaccharides

Analytical Chemistry

• Sensitivity and resolution
• Instrumentation
• Choosing an analytical method
• Errors and uncertainties
• NMR
• Mass spectrometry
• Chromatography (gas and liquid; hyphenated techniques)
• X-ray Crystallography

States of Matter

• Solids and liquids
• Solutions, colligative properties

Intended Learning Outcomes: By the end of this modules, students will be able to

Demonstrate understanding of the differential/integral relation between energy and forces.

Apply differential equation solution methods to calculate classical motion.

Derive solutions for translation, rotational and vibrational motion of a classical body.

Demonstrate understanding of single and two-body harmonic oscillators.

Express propagating and standing waves mathematically.

Apply classical motion concepts to describe the expected behaviour of a “classical” rigid di-atomic molecule and a “classical” orbiting electron.

Derive the molecular orbitals of simple organic and inorganic molecules

Discuss resonance, conjugation and delocalisation

Appreciate the distinction between a molecular representation and the reality of its structure

Identify the major classes of primary metabolites and discuss their chemistry

Identify epimers, anomers and tautomers

Discuss key underlying considerations in analytical chemistry

Describe and demonstrate an understanding of the underpinning principles and rudimentary applications of chromatography

Describe and demonstrate an understanding of the underpinning principles and rudimentary applications of mass spectrometry

Describe and demonstrate an understanding of the underpinning principles and rudimentary applications of nuclear magnetic resonance spectroscopy

Describe and demonstrate an understanding of the underpinning principles of chemical instrumentation

Distinguish and describe the bonding in solids using free electron and band theory models

Describe structures of binary compounds based on packing and interstitial sites

Predict structures by consideration of ionic radii

Calculate Lattice energies using different models

Distinguish coordination compounds isomers and describe their structure

Describe electronic structure of coordination compounds using Crystal Field Theory

Apply CFT to interpret absorption spectra and simple magnetic properties of coordination compounds

Analyse, compare and predict the stability constants of simple coordination compounds

Further identify experimental techniques and evaluate which to use under different conditions

Assessment:	Examination 1 (55%) Presentation (15%) Laboratory work (20%) Coursework 2 (5%) Coursework 3 (5%)

Assessment Description: Examination
Group presentation
Laboratory work
Laboratory report
Weekly assessments (listed above in monthly blocks)

Due to the resource demands, failure cannot be redeemed for the laboratory activities.

The Laboratory component must be passed (40%) in order to pass the module

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

Assessment Feedback: Students will receive regular targeted feedback on their work through verbal, written and online media. Students will also be trained in self-reflection and peer support to enhance the student-generated feedback. Students will also be supported in making best use of feedback available.

Failure Redemption: A suitable supplementary attempt will be permitted on relevant assessment in line with University policy.

Due to the resource demands, failure cannot be redeemed for the laboratory activities.

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 S. Bott on 15/12/2016 11:01

CH-125 Chemical Reactions 1

Credits: 20 Session: 2022/23 September-January

Pre-requisite Modules:

Co-requisite Modules: CH-122

Lecturer(s): Dr EJ Loveridge, Prof SG Bott

Format: 30 hours practicals,
36 hours classes/workshops
74 hours independent study,
60 hours preparation for assessment

Delivery Method: Flipped content, online and F2F active classrooms and workshops, tutorials, peer-led learning, practicals

Module Aims: This module will introduce students to the fundamentals of the physical aspects of chemical reactions, both thermodynamic and kinetic. These and other previously-understood concepts will then be applied to the student of addition reactions, both organic and inorganic.

This module will build on existing understanding and will employ mathematics taught in other modules (CH-122) to conceptualise some of the material taught in this module.

The module will have a variety of formative assessment opportunities and summative assessments that include writing of technical reports, a presentation, homework, workshops, and an exam.

Module Content: An introduction to Chemical Equilibria

• Introduction to energy and heat
• Introduction to delta H
• Spontaneity of reactions – consideration of delta G and delta H.
• The Second Law
• Equilibrium – definition, chemical potential
• Aqueous equilibria:
Acids/bases
Buffers/titrations
Solubility constants, formation constants
• delta G = -RT ln K

An introduction to Chemical Kinetics

• Thermo vs Kinetics
• Collision theory
• Reaction Coordinate and activation energy
• Arrhenius equation
• Catalysis
• Rate laws, determination, integrated rates
• Steady State Approximation

Reactions

• Nucleophile and electrophile
• Acid and base
• Alkenes: Electrophilic addition reactions
• Carbonyl compounds: Nucleophilic addition reactions

Application to experimental results

Intended Learning Outcomes: By the end of this modules, students will be able to

Distinguish between thermodynamic and kinetic factors in chemical reactions

Predict the direction of a reaction

Explain factors that contribute to the spontaneity of reactions and relate them quantitatively

Describe qualitatively and quantitatively aspects of aqueous equilibria

Explain concepts of chemical kinetics and interpret chemical reactions from kinetic data.

Demonstrate an understanding of the mechanisms and predict products of addition reactions

Assessment:
Examination 1 (55%)
Presentation (15%)
Laboratory work (20%)
Coursework 2 (5%)
Coursework 3 (5%)

Assessment Description: Examination
Presentation
Laboratory work
Laboratory report
Weekly assessments (listed above in monthly blocks)

Due to the resource demands, failure cannot be redeemed for the laboratory activities.

The Laboratory component must be passed (40%) in order to pass the module

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

Assessment Feedback: Students will receive regular targeted feedback on their work through verbal, written and online media. Students will also be trained in self-reflection and peer support to enhance the student-generated feedback. Students will also be supported in making best use of feedback available.

Failure Redemption: A suitable supplementary attempt will be permitted on relevant assessment in line with University policy.

Due to the resource demands, failure cannot be redeemed for the laboratory activities.

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 S. Bott on 15/12/2016 11:01

CH-126 Chemical Reactions 2

Credits: 20 Session: 2022/23 January-June

Pre-requisite Modules: CH-122; CH-125

Co-requisite Modules: CH-124

Lecturer(s): Dr M Bassetto, Prof SG Bott, Dr M Carta, Dr JW Ryan

Format: 30 hours practicals,
36 hours classes/workshops
74 hours independent study,
60 hours preparation for assessment

Delivery Method: Flipped classes, seminars, workshops, peer support, laboratory experiments and online content.

Module Aims: This module will continue the discussion of the fundamentals of the physical aspects of chemical reactions, both thermodynamic and kinetic. These and other previously-understood concepts will then be applied to the study of substitution and elimination and an introduction to redox reactions, both organic and inorganic.

This module will build on existing understanding and will employ mathematics taught in other modules (CH-122) to conceptualise some of the material taught in this module.

The module will have a variety of formative assessment opportunities and summative assessments that include writing of technical reports, a presentation, homework, workshops, and an exam.

Module Content: Molecular driving forces

• Systems and states
• Work and energy
• Temperature and heat
• The first law
• Internal energy
• Enthalpy
• Thermochemistry
• Adiabatic changes
• Redox potential; Latimer diagrams

Reactions

• Nucleophilic substitution and elimination reactions
• Reactions alpha to a carbonyl group
• Electrophilic aromatic substitution
• Inorganic substitution reactions
• Organic redox reactions
• Simple inorganic redox reactions

Main Group Chemistry

• Sources of elements
• Allotropes
• Oxides of main group elements
• Hydrides of main group elements
• Halides of main group elements
• Boranes and interhalogen compounds

Intended Learning Outcomes: By the end of this modules, students will be able to

Describe a perfect gas and use it to make a first approximation on the properties of a real gas

Demonstrate an understanding of fundamental thermodynamic concepts of systems, work and heat flow

Demonstrate an in-depth understanding of the zeroth and first law of thermodynamics

Understand the equivalence of work and heat

Apply mathematical knowledge to derive solutions and solve problems in thermodynamics

Describe adiabatic changes of ideal gas (reversible and non-reversible expansion, isothermal processes)

Demonstrate an understanding of the mechanisms of substitution and elimination reactions, and predict their products

Provide simple quantitative descriptions of redox reactions, and predict their products

Describe using chemical principles the sources of main group elements

Compare and contrast the physical, structural and chemical properties of the main group element oxides, hydrides and halides.

Assessment:	Examination 1 (55%) Presentation (15%) Laboratory work (20%) Coursework 2 (5%) Coursework 3 (5%)

Assessment Description: Examination
Presentation
Laboratory work
Laboratory report
Weekly assessments (listed above in monthly blocks)

Due to the resource demands, failure cannot be redeemed for the laboratory activities.

The Laboratory component must be passed (40%) in order to pass the module

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

Assessment Feedback: Students will receive regular targeted feedback on their work through verbal, written and online media. Students will also be trained in self-reflection and peer support to enhance the student-generated feedback. Students will also be supported in making best use of feedback available.

Failure Redemption: A suitable supplementary attempt will be permitted on relevant assessment in line with University policy.

Due to the resource demands, failure cannot be redeemed for the laboratory activities.

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 students as a stand-alone module. Only available if the student is studying Chemistry Engineering Year 1.

Module code reserved by S. Bott on 15/12/2016 11:01

CH-127 Chemical Practice

Credits: 20 Session: 2022/23 January-June

Pre-requisite Modules: ch-122

Co-requisite Modules: CH-124; CH-126

Lecturer(s): Dr I Mabbett, Prof GN Alexandrowicz, Dr M Bassetto, Prof SG Bott, Dr M Carta, Dr E Evans, Dr MR Gill, Prof OJ Guy, Dr EJ Loveridge, Prof J Mareque-Rivas, Dr FJ Martin-Martinez, Dr D Roy, Dr JW Ryan

Format: 36 hours seminars/workshops
50 experiential hours,
60 hours independent study,
54 hours preparation for assessment

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, seminars, workshops, online, experiential learning, field trips

Module Aims: This module will introduce students to the three broad employment areas for chemistry: research, teaching or industrial positions. The lecture portion will cover fundamental aspects of being a professional chemist including safety, report writing, project management, and teaching skills. Students will attend research seminars and workshops, industrial field trips, and supervise school pupils in the laboratory.

Assessment will be by coursework and a written report.

Module Content: Industry Skills

Project management language and skills
Time management
Intellectual property
Industrial practical considerations
Commercialization considerations

Research Skills

The research process
Literature review
The grant process
Interdisciplinary nature of research

Teaching Skills

Educator responsibilities
Safety considerations
Presentation skills
Small group instruction and supervision
Reflective practices

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

Apply specific and general safety practices to laboratory-based and other practical work.

Apply various personal and professional project management skills

Demonstrate an understanding of the academic research process

Demonstrate an understanding of commercial research process

Demonstrate an appreciation of teaching practice

Demonstrate an understanding of the context, content and differences of various potential employment tracks

Assessment: Coursework 1 (30%)
Participation Exercise (30%)
Report (30%)
Coursework 2 (10%)

Resit Assessment: Report (100%)

Assessment Description: Research workshops
Participation in industrial field trips
Teaching reflective account
SEA assessment for coursework

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

Assessment Feedback: Written and/or verbal individual feedback on assessments as appropriate.

Failure Redemption: Repeat report as appropriate in accordance 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 code reserved by i.mabbett on 18/04/2016 16:31:54