

University of the West of Scotland
Module Descriptor

Session: 2023/24

Title of Module: Inorganic Chemistry 2			
Code: CHEM08003	SCQF Level: 8 (Scottish Credit and Qualifications Framework)	Credit Points: 20	ECTS: 10 (European Credit Transfer Scheme)
School:	School of Computing, Engineering and Physical Sciences		
Module Co-ordinator:	Alastair Marr		
Summary of Module			
<p>Graduate attribute This module introduces key concepts in inorganic chemistry. The evidence upon which our current understanding of atomic and molecular structure is based is discussed and placed within its historical context. The electronic structure of the atom is presented as the underlying basis for chemical periodicity and this is explored through a systematic survey of the Main Group elements in the Periodic Table. The aim in this area of the course is to draw out the trends in properties, types of compounds and reactions in order to emphasise the elegance of the Periodic Table as a predictive tool. The structure and bonding in a range of molecules is discussed by reference to the main theories of bonding. Valence Bond Theory is briefly revised. Simple Molecular Orbital Theory is introduced, building on the students' knowledge of the atomic orbitals. The properties of simple homonuclear and heteronuclear molecules are explained or predicted. Crystal Field Theory is introduced and the magnetic and spectroscopic properties of a range of Transition Metal compounds are interpreted. An introduction to Coordination Chemistry covers basic definitions, the nature of ligands, complex formation and isomerism. An extensive review of p block trends is also completed.</p> <p>Graduate Attributes: Academic - inorganic & general chemistry competency, scientific thinker, problem solver, practical skills, calculation numeracy. Personal / Professional - Team working, written & verbal communicator, motivated in science</p> <ul style="list-style-type: none"> • Students will undertake a short set of class tests, phased throughout the presentation of the module, to test the various skills being developed and sit a final examination covering all aspects of the course. A workshop programme will present opportunities for skills development and practice and a laboratory programme will enable students to experience first hand some of the chemistry discussed in the lectures. • The objective is to provide a thorough underpinning of the major concepts of inorganic chemistry which will allow students to move into advanced studies in later years. 			

Module Delivery Method					
Face-To-Face	Blended	Fully Online	HybridC	HybridO	Work-based Learning
✓			✓		
<p>Face-To-Face Term used to describe the traditional classroom environment where the students and the lecturer meet synchronously in the same room for the whole provision.</p>					

Blended

A mode of delivery of a module or a programme that involves online and face-to-face delivery of learning, teaching and assessment activities, student support and feedback. A programme may be considered "blended" if it includes a combination of face-to-face, online and blended modules. If an online programme has any compulsory face-to-face and campus elements it must be described as blended with clearly articulated delivery information to manage student expectations

Fully Online

Instruction that is solely delivered by web-based or internet-based technologies. This term is used to describe the previously used terms distance learning and e learning.

HybridC

Online with mandatory face-to-face learning on Campus

HybridO

Online with optional face-to-face learning on Campus

Work-based Learning

Learning activities where the main location for the learning experience is in the workplace.

Campus(es) for Module Delivery

The module will **normally** be offered on the following campuses / or by Distance/Online Learning: (Provided viable student numbers permit)

Paisley:	Ayr:	Dumfries:	Lanarkshire:	London:	Distance/Online Learning:	Other:
✓						

Term(s) for Module Delivery

(Provided viable student numbers permit).

Term 1	Term 2	Term 3
		✓

Learning Outcomes: (maximum of 5 statements)

On successful completion of this module the student will be able to:

- L1. Demonstrate a knowledge and understanding of the underlying concepts of Inorganic Chemistry.
- L2. Apply the concepts of Inorganic Chemistry to solve a range of different chemical problems.
- L3. Demonstrate practical laboratory skills appropriate to the area of Inorganic Chemistry, working safely and carefully. Handle experimental data in a manner which demonstrates understanding of its significance.

Employability Skills and Personal Development Planning (PDP) Skills

SCQF Headings	During completion of this module, there will be an opportunity to achieve core skills in:
Knowledge and Understanding (K and U)	SCQF Level 8. The broad area of modern inorganic chemistry with particular reference to theories of bonding in molecules. Some limited knowledge of current research areas.
Practice: Applied Knowledge and Understanding	SCQF Level 8. Aspects of practical chemistry including the synthesis and characterisation of inorganic compounds. The interpretation of experimental results by reference to the conceptual framework of modern inorganic chemistry.
Generic Cognitive skills	SCQF Level 8. Evaluation and use of concepts to the solution of a range of problems.

Communication, ICT and Numeracy Skills	SCQF Level 8. Researching topics in the general field of inorganic chemistry and presenting findings in an appropriate manner. Presenting laboratory reports in the required format. Aspects of chemical stoichiometry.	
Autonomy, Accountability and Working with others	SCQF Level 8. Taking own responsibility for aspects of the learning process. Meeting deadlines for achievement of individual learning outcomes. Cooperating with fellow students to achieve a group outcome.	
Pre-requisites:	Before undertaking this module the student should have undertaken the following:	
	Module Code: CHEM07003	Module Title: Structure of Chemistry
	Other:	or appropriate background. A level Chemistry (for direct entry students)
Co-requisites	Module Code:	Module Title:

* Indicates that module descriptor is not published.

Learning and Teaching	
Students are exposed to a mix of lectures and supporting workshops which encourage them to explore the broad area of modern inorganic chemistry. Workshop based assignments test understanding of the main subject areas covered and provide detailed feedback. The laboratory programme aims to strengthen practical and interpretative skills. Students work on some experiments individually but also undertake a group investigation which is the basis for the formal lab report. A special all day revision workshop is run shortly before the examination, enabling students to troubleshoot any areas they find difficult.	
Learning Activities During completion of this module, the learning activities undertaken to achieve the module learning outcomes are stated below:	Student Learning Hours (Normally totalling 200 hours): (Note: Learning hours include both contact hours and hours spent on other learning activities)
Lecture/Core Content Delivery	12
Tutorial/Synchronous Support Activity	12
Laboratory/Practical Demonstration/Workshop	24
Independent Study	152
	200 Hours Total
**Indicative Resources: (eg. Core text, journals, internet access)	
The following materials form essential underpinning for the module content and ultimately for the learning outcomes: Basic Inorganic Chemistry, F. A. Cotton, G. Wilkinson and P. L. Gaus, 3rd Edition, J. Wiley, (1995) ISBN 0471505323 Inorganic Chemistry, P. W. Atkins, J. Weller, P. Overton, T. Rourke M. and F. Armstrong, 6th Edition, Oxford (2014) ISBN 978-0-19-964182-6	

University Chemistry, B. H. Mahan and R. J. Myers, 4th Edition, Benjamin / Cummings Publishing Company, Inc., (1987) ISBN 0-201-05846-4

Essential Trends in Inorganic Chemistry, D. M. P. Mingos, Oxford (1998) ISBN 0198501080

Inorganic Chemistry Journals

Internet access to scientific databases

(**N.B. Although reading lists should include current publications, students are advised (particularly for material marked with an asterisk*) to wait until the start of session for confirmation of the most up-to-date material)

Engagement Requirements

In line with the Academic Engagement Procedure, Students are defined as academically engaged if they are regularly engaged with timetabled teaching sessions, course-related learning resources including those in the Library and on the relevant learning platform, and complete assessments and submit these on time. Please refer to the Academic Engagement Procedure at the following link: [Academic engagement procedure](#)

Supplemental Information

Programme Board	Physical Sciences
Assessment Results (Pass/Fail)	No
Subject Panel	Physical Sciences
Moderator	Dr Andrew McLean
External Examiner	M Paterson
Accreditation Details	This module is accredited by the Royal Society of Chemistry(RSC) as part of the BSc(Hons) Chemistry Programme
Changes/Version Number	2.16 Updating of Indicative Resources Section. Change to Hybrid C delivery for 2023/24

Assessment: (also refer to Assessment Outcomes Grids below)

Assessment will be based on the following: (a) final written exam worth 50% of the final mark, and (b) continuous assessment worth 50% of the final mark

The continuous assessment component in this module will consist of the following elements: (i) Class Test 20% of the final mark, (ii) Laboratory Reports worth 20% of the final mark, and (iii) Workbook worth 10% of the final mark.

Further details, and the academic calendar when assessment is likely to feature will be provided within the module Information Pack.

(N.B. (i) **Assessment Outcomes Grids** for the module (one for each component) can be found below which clearly demonstrate how the learning outcomes of the module will be assessed.
(ii) An **indicative schedule** listing approximate times within the academic calendar when assessment is likely to feature will be provided within the Student Handbook.)

Assessment Outcome Grids (Footnote A.)

Component 1					
Assessment Type (Footnote B.)	Learning Outcome (1)	Learning Outcome (2)	Learning Outcome (3)	Weighting (%) of Assessment Element	Timetabled Contact Hours
Class test (written)	✓	✓		20	1
Laboratory/ Clinical/ Field notebook		✓	✓	20	0
Report of practical/ field/ clinical work	✓	✓	✓	10	0
Component 2					
Assessment Type (Footnote B.)	Learning Outcome (1)	Learning Outcome (2)	Learning Outcome (3)	Weighting (%) of Assessment Element	Timetabled Contact Hours
Unseen open book	✓	✓		50	2
Combined Total For All Components				100%	3 hours

Footnotes

- A. Referred to within Assessment Section above
 B. Identified in the Learning Outcome Section above

Note(s):

1. More than one assessment method can be used to assess individual learning outcomes.
2. Schools are responsible for determining student contact hours. Please refer to University Policy on contact hours (extract contained within section 10 of the Module Descriptor guidance note).
This will normally be variable across Schools, dependent on Programmes &/or Professional requirements.

Equality and Diversity

This module is suitable for any student with appropriate chemistry background, however it should be noted that in order for you to complete this module the laboratory element of coursework will require to be undertaken, disability support can be provided where necessary, consequently, if disability support is needed to complete this part of the module, then the University's Health and Safety Officer should be consulted to make sure that safety in the laboratory is not compromised

Current University Policy on Equality and Diversity applies.

[UWS Equality and Diversity Policy](#)

(N.B. Every effort will be made by the University to accommodate any equality and diversity issues brought to the attention of the School)