

University of the West of Scotland

Module Descriptor

Session: 2024/25

Title of Module: Inorganic Chemistry 2			
Code: CHEM08003	SCQF Level: 9 (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:	Dr Alastair Marr		
Summary of Module			
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 homo-nuclear 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. The chemistry of some selected d block elements is described, referring, where possible, to newer areas such as 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	Hybrid0	Work-Based Learning
☒	☐	☐	☐	☐	☐
See Guidance Note for details.					

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) (tick as appropriate)						
Paisley:	Ayr:	Dumfries:	Lanarkshire:	London:	Distance/Online Learning:	Other:
☒	☐	☐	☐	☐	☐	Add name

Term(s) for Module Delivery					
(Provided viable student numbers permit).					
Term 1	☐	Term 2	☒	Term 3	☐

Learning Outcomes: (maximum of 5 statements) These should take cognisance of the SCQF level descriptors and be at the appropriate level for the module. At the end 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	
In line with current learning and teaching principles, a 20-credit module includes 200 learning hours, normally including a minimum of 36 contact hours and maximum of 48 contact hours.	
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

Click or tap here to enter text.

Please ensure the list is kept short and current. Essential resources should be included, broader resources should be kept for module handbooks / Aula VLE.

Resources should be listed in Harvard Cite Them Rite referencing style or agreed professional body deviation and in alphabetical order.

(**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)

Attendance and Engagement Requirements

In line with the [Student Attendance and Engagement Procedure](#): Students are academically engaged if they are regularly attending and participating in timetabled on-campus and online teaching sessions, asynchronous online learning activities,

course-related learning resources, and complete assessments and submit these on time.

For the purposes of this module, academic engagement equates to the following:

Academic Engagement procedure

Equality and Diversity

The University's Equality, Diversity and Human Rights Procedure can be accessed at the following link: [UWS Equality, Diversity and Human Rights Code](#).

Please ensure any specific requirements are detailed in this section. Module Co-ordinators should consider the accessibility of their module for groups with protected characteristics..

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

Supplemental Information

Divisional Programme Board	Physical Sciences
Assessment Results (Pass/Fail)	Yes ☐ No ☒
School Assessment Board	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	3.5

Assessment: (also refer to Assessment Outcomes Grids below)

This section should make transparent what assessment categories form part of this module (stating what % contributes to the final mark).

Maximum of 3 main assessment categories can be identified (which may comprise smaller elements of assessment).

NB: The 30% aggregate regulation (Reg. 3.9) (40% for PG) for each main category must be taken into account. When using PSMD, if all assessments are

recorded in the one box, only one assessment grid will show and the 30% (40% at PG) aggregate regulation will not stand. For the aggregate regulation to stand, each component of assessment must be captured in a separate box.

Please provide brief information about the overall approach to assessment that is taken within the module. In order to be flexible with assessment delivery, be brief, but do state assessment type (e.g. written assignment rather than “essay” / presentation, etc) and keep the detail for the module handbook. [Click or tap here to enter text.](#)

Assessment 1 - Class test

Assessment 2 - Coursework

(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 Module Handbook.)

Assessment Outcome Grids (See Guidance Note)

Component 1							
Assessment Type (Footnote B.)	Learning Outcome (1)	Learning Outcome (2)	Learning Outcome (3)	Learning Outcome (4)	Learning Outcome (5)	Weighting (%) of Assessment Element	Timetabled Contact Hours
Closed book on campus assessment	X	X				50	2

Component 2							
Assessment Type (Footnote B.)	Learning Outcome (1)	Learning Outcome (2)	Learning Outcome (3)	Learning Outcome (4)		Weighting (%) of Assessment Element	Timetabled Contact Hours
Laboratory		X	X			20	0
Portfolio of written work	X	X		X		20	0
Class Tests	X	X	X			10	1

Combined Total for All Components						100%	3 hours
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Change Control:

What	When	Who
Further guidance on aggregate regulation and application when completing template		
Updated contact hours		
Updated Student Attendance and Engagement Procedure		
Updated UWS Equality, Diversity and Human Rights Code		
Guidance Note 23-24 provided		
General housekeeping to text across sections.		

Version Number: MD Template 1 (2023-24)