Module Descriptor

Title	Inorganic Chemistry 2		
Session	2025/26	**Status**	Published
Code	CHEM08003	**SCQF Level**	8
Credit Points	20	**ECTS (European Credit Transfer Scheme)**	10
School	**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 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	On-Campus[1] ☒	Hybrid[2] ☐	Online[3] ☐	Work -Based Learning[4] ☐
Campuses for Module Delivery	☐ Ayr ☐ Dumfries	☐ Lanarkshire ☐ London ☒ Paisley	☐ Online / Distance Learning ☐ Other (specify)	

Terms for Module Delivery	Term 1	☐	Term 2	☒	Term 3	☐
Long-thin Delivery over more than one Term	Term 1 – Term 2	☐	Term 2 – Term 3	☐	Term 3 – Term 1	☐

Learning Outcomes	
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
L4	
L5	

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 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 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.

[1] Where contact hours are synchronous/ live and take place fully on campus. Campus-based learning is focused on providing an interactive learning experience supported by a range of digitally-enabled asynchronous learning opportunities including learning materials, resources, and opportunities provided via the virtual learning environment. On-campus contact hours will be clearly articulated to students.

[2] The module includes a combination of synchronous/ live on-campus and online learning events. These will be supported by a range of digitally-enabled asynchronous learning opportunities including learning materials, resources, and opportunities provided via the virtual learning environment. On-campus and online contact hours will be clearly articulated to students.

[3] Where all learning is solely delivered by web-based or internet-based technologies and the participants can engage in all learning activities through these means. All required contact hours will be clearly articulated to students.

[4] Learning activities where the main location for the learning experience is in the workplace. All required contact hours, whether online or on campus, will be clearly articulated to students

Generic Cognitive skills	**SCQF 8** Evaluation and use of concepts to the solution of a range of problems.
Communication, ICT and Numeracy Skills	**SCQF 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 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.

Prerequisites	**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**

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** (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
Please select	
Please select	
TOTAL	200

Indicative Resources
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)

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:

The School of Computing, Engineering and Physical Sciences considers attendance and engagement to mean a commitment to attending, and engaging in, timetabled sessions. You will scan your attendance via the scanners each time you are on-campus and you will login to the VLE several times per week. Where you are unable to attend a timetabled learning session due to illness or other circumstance, you should notify the Programme Leader that you cannot attend. Across the School an 80% attendance threshold is set. If you fall below this, you will be referred to the Student Success Team to see how we can best support your studies.

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.

Aligned with the University's commitment to equality and diversity, this module supports equality of opportunity for students from all backgrounds and learning needs. Using the VLE, material will be presented electronically in formats that allow flexible access and manipulation of content. This module complies with University regulations and guidance on inclusive learning and teaching practice. This module has lab-based teaching and as such you are advised to speak to the Module Co-ordinator to ensure that specialist assistive equipment, support provision and adjustment to assessment practice can be put in place, in accordance with the University's policies and regulations.

(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	**Engineering Physical Sciences**
Overall Assessment Results	☐ **Pass / Fail** ☒ **Graded**
Module Eligible for Compensation	☐ **Yes** ☒ **No** **If this module is eligible for compensation, there may be cases where compensation is not permitted due to programme accreditation requirements. Please check the associated programme specification for details.**

School Assessment Board	Physical Sciences
Moderator	Dr Andrew McLean
External Examiner	Prof. Martin Paterson
Accreditation Details	This module is accredited by the royal Society of Chemistry(RSC) as part of the BSc(Hons) Chemistry programme
Module Appears in CPD catalogue	☐ **Yes** ☒ **No**
Changes / Version Number	3.6

Assessment (also refer to Assessment Outcomes Grids below)
Assessment 1
Class Test
Assessment 2
Coursework Individual weekly workshops (8 of) 40% of Coursework Class weekly Workshop Based Assignments in groups (4 of) 20% of Coursework Formal Lab report (1 of) and 4 lab prformae 40% of Coursework
Assessment 3
(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.)

Component 1							
Assessment Type	**LO1**	**LO2**	**LO3**	**LO4**	**LO5**	**Weighting of Assessment Element (%)**	**Timetabled Contact Hours**
Closed book on campus assessment	☒	☒	☐	☐	☐	50	2

Component 2							
Assessment Type	**LO1**	**LO2**	**LO3**	**LO4**	**LO5**	**Weighting of Assessment Element (%)**	**Timetabled Contact Hours**
Coursework	☒	☒	☒	☒	☐	50	32

Component 3

Assessment Type	LO1	LO2	LO3	LO4	LO5	Weighting of Assessment Element (%)	Timetabled Contact Hours
	☐	☐	☐	☐	☐		
Combined total for all components						100%	34 hours

Change Control

What	When	Who