Module Descriptor

Title	Inorganic Chemistry 3		
Session	2025/26	**Status**	Published
Code	CHEM09001	**SCQF Level**	9
Credit Points	20	**ECTS (European Credit Transfer Scheme)**	10
School	**Computing, Engineering and Physical Sciences**		
Module Co-ordinator	Dr Alastair Marr		

Summary of Module

The module builds on concepts introduced in level 8, Inorganic Chemistry ll. The basic treatments of CFT and MO Theory previously encountered are extended to a deeper understanding of the chemistry of TM complexes via their spectroscopic and magnetic properties. A theoretical treatment of spectroscopy applied to simple molecules introduces the concepts required for rotational, vibrational and electronic transitions including application of selection rules. A more detailed treatment of d-d spectroscopy in TM complexes using Tanabe-Sugano diagrams is introduced. The reaction chemistry of Transition Metal compounds is explored with factors affecting their stabilities in aqueous solution. The mechanisms of a variety of reactions are linked to important industrial processes dependent on TM catalysts. As many catalysts are organometallic compounds, the nomenclature of OMCs are introduced and the structures and chemistry of a variety of 0M compounds are explored. Symmetry and group theory are introduced and used to explore the IR and Raman spectroscopy of simple molecules.

A series of tutorials provides support and practice in applying the concepts and the laboratory programme enhances the student experience by allowing first hand exploration of the fascinating chemistry. A series of assignments will test the skills developed through the programme of study and a final examination will be set. covering the major areas studied

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

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 an integrated knowledge of the principal concepts of Inorganic Chemistry, appreciating the contribution made by spectroscopic techniques to our understanding of molecular structure and reactivity
L2	Apply these concepts to the critical analysis of a variety of different chemical problems
L3	Demonstrate a variety of practical laboratory skills, working safely and carefully. Interpret experimental data, linking it clearly to the underlying concepts.
L4	Identify a topic of current interest in inorganic chemistry.
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 9** The broad area of Inorganic Chemistry with an integrated knowledge of bonding concepts, molecular properties and factors affecting the reactivity of molecules.
Practice: Applied Knowledge and Understanding	**SCQF 9** Aspects of practical inorganic chemistry including the synthesis and characterisation of more unusual compounds. Integration of experimental observations and measurements to explain molecular behaviour.

[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 9** Evaluating information from a range of sources in order to solve a variety of chemical problems.
Communication, ICT and Numeracy Skills	**SCQF 9** Presenting laboratory reports in appropriate format. Using scientific databases to research a topic of current interest in the field and presenting the findings.
Autonomy, Accountability and Working with Others	**SCQF 9** Working responsibly, with due regard to time management

Prerequisites	**Module Code** CHEM08003	**Module Title** Inorganic Chemistry 2
	Other or appropriate background	
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: Weller, Overton, Rourke & Armstrong, Inorganic Chemistry, Oxford University Press, lSBN 978-0-19-964182-6 Current research literature in Inorganic Chemistry accessed via UWS library and online 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	2.14

Assessment (also refer to Assessment Outcomes Grids below)
Assessment 1
Class Test
Assessment 2
Coursework Four workshop assignments 40% Laboratory formal reports 40% Information Retrieval Assignment 20%
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	20

Component 3							
Assessment Type	**LO1**	**LO2**	**LO3**	**LO4**	**LO5**	**Weighting of Assessment Element (%)**	**Timetabled Contact Hours**
	☐	☐	☐	☐	☐		
Combined total for all components						100%	22 hours

Change Control

What	**When**	**Who**
