

Module Title:	Analytical Inorganic Chemistry 2
Language of Instruction:	English
Credits:	5
NFQ Level:	6
Module Delivered In	3 programme(s)
Teaching & Learning Strategies:	This module will be taught in 1 theory classes of one hour duration for 12 weeks and one practical classes of three hour duration for 12 weeks. To consolidate lectures and practicals, students will be required to carry out assignments and prepare weekly practical reports analysing their own research and results. Any course related issues or questions that may arise will be discussed in lectures.
Module Aim:	The aim of this module is to impart knowledge of the basic analytical principles, in areas of spectroscopic, titrimetric, electrochemical and transition metal chemistry and to provide practical training in this subject are with due regard to best practice.
Learning Outcomes	
<i>On successful completion of this module the learner should be able to:</i>	
LO1	Describe the physical and chemical properties of the representative and transition elements
LO2	Exhibit a knowledge of basic inorganic chemistry.
LO3	Be proficient in the use of analytical laboratory instruments and necessary sample preparation.
Pre-requisite learning	
Module Recommendations <i>This is prior learning (or a practical skill) that is recommended before enrolment in this module.</i>	
No recommendations listed	
Incompatible Modules <i>These are modules which have learning outcomes that are too similar to the learning outcomes of this module.</i>	
No incompatible modules listed	
Co-requisite Modules	
No Co-requisite modules listed	
Requirements <i>This is prior learning (or a practical skill) that is mandatory before enrolment in this module is allowed.</i>	
Successful completion of year 1 or equivalent	

Module Content & Assessment

Indicative Content

Theory

1. Spectroscopic Methods: The electromagnetic spectrum. Introduction to AAS, FES, FTIR and UV-VIS methods, including sample preparation, concentration range, industrial applications, optimum conditions, interferences and method validation. 2. Titrimetric Methods: Principles of acid-base, complexometric, redox and precipitation titrations; importance of indicator selection and concentration, and stoichiometric calculations. 3. Ionic Solutions and Electrochemical Cells: Nernst Equation. 4. Transition Metal Chemistry: The first series of transition elements. The metal (Sc-Zn); electronic configuration, chemical properties and uses. 5. Inorganic Chemistry: Systematic chemistry of the non-transition elements i.e. physical properties, group chemical reactions.

Practical

Introductory practicals covering the relevant health and safety of the laboratory and calculations. Subsequent practicals will develop skills in the use of analytical instrumentation (AAS, FES, FTIR, UV-VIS, GC, HPLC, IC), analytical equipment (pH and ion selective electrodes and conductivity meter), and techniques (titrimetric methods, sample preparation, method validation). Preparative inorganic chemistry and qualitative inorganic chemistry is also scheduled. The practicals covered will reinforce and amplify the materials covered in the lecture course. A major emphasis will be placed on the interfacing of new and updated instrument software and industrial techniques.

Assessment Breakdown

	%
Continuous Assessment	60.00%
Practical	40.00%

Special Regulation

Students must receive a minimum grade (35%) in both the practical and CA elements to pass this module.

Continuous Assessment

Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Other	3 continuous assessment exam	1,2	60.00	Ongoing

No Project

Practical

Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Practical/Skills Evaluation	n/a	3	40.00	Every Week

No End of Module Formal Examination

SETU Carlow Campus reserves the right to alter the nature and timings of assessment

Module Workload

Workload: Full Time		
<i>Workload Type</i>	<i>Frequency</i>	<i>Average Weekly Learner Workload</i>
Lecture	12 Weeks per Stage	1.00
Laboratory	12 Weeks per Stage	3.00
Independent Learning	15 Weeks per Stage	5.13
Total Hours		125.00

Module Delivered In

Programme Code	Programme	Semester	Delivery
CW_SAPHA_B	Bachelor of Science (Honours) in Pharmaceutics and Drug Formulation	4	Mandatory
CW_SAASC_D	Bachelor of Science in Analytical Science	4	Mandatory
CW_SASCI_C	Higher Certificate in Science in Applied Biology or Applied Chemistry	4	Group Elective 2