Unit Outline (Higher Education)

Institute / School:	Institute of Innovation, Science & Sustainability
Unit Title:	Chemistry 2
Unit ID:	SCCHM1002
Credit Points:	15.00
Prerequisite(s):	Nil
Co-requisite(s):	Nil
Exclusion(s):	Nil
ASCED:	010500

Description of the Unit:

The contents of this unit focus on introductory-level organic and biomolecular chemistries as well as the chemistry of transition metals. On completion of this unit, students will have gained experience in the systematic naming of organic compounds and recognition of functional groups, as well as investigated the behaviour and reactivities of a number of different classes of organic molecules. Biologically significant molecules will feature as case studies in both organic and inorganic topics. Students will discuss the formation of transition metal complexes and rationalise their unique physical properties including colour and magnetism. The concepts developed within the lectures and tutorials are complemented through an integrated laboratory program where students will develop skills in laboratory techniques, scientific inquiry, and scientific communication.

Grade Scheme:	Graded (HD, D, C, P, MF, F, XF)

Work Experience:

No work experience

Placement Component:	No

Supplementary Assessment: Yes

Where supplementary assessment is available a student must have failed overall in the Unit but gained a final mark of 45 per cent or above, has completed all major assessment tasks (including all sub-components where a task has multiple parts) as specified in the Unit Description and is not eligible for any other form of supplementary assessment.

Course Level:

Level of Unit in Course	AQF Level of Course					
	5	6	7	8	9	10
Introductory			✔			
Intermediate						
Advanced						

Learning Outcomes:

Knowledge:

K1. Demonstrate a basic understanding of chemical nomenclature.

K2. Explore a wide range of molecular structures and investigate aspects of stereochemistry such as isomerism and chirality.

K3. Describe the classification, bonding, structure, properties and reactions of a wide range of organic compounds according to the functional groups they contain.

K4. Describe the nature of biological and synthetic macromolecules such as proteins, carbohydrates, and polymers.

K5. Describe how spectroscopy can be used to investigate molecular structure.

K6. Discuss the properties of transition elements and their coordination compounds.

Skills:

S1. Identify and interrelate chemistry at symbolic, observational and molecular levels.

S2. Demonstrate ability to conduct laboratory experiments safely and ethically.

S3. Communicate experimental outcomes in an appropriate form, including written reports or presentations.

S4. Foster the acquisition of team work skills by working in small groups in peer-assisted learning scenarios, laboratory activities and presentations.

S5. Demonstrate ability to be an independent self-directed-learner by completing assigned on-line assessment.

Application of knowledge and skills:

A1. Apply theoretical knowledge to solve problems and conduct laboratory exercises and communicate their findings in a number of ways including laboratory reports and presentations.

A2. Apply appropriate problem-solving techniques to solve problems independently and within teams.

A3. Incorporate data collection and inference of its meaning to written reports and presentations.

Unit Content:

The curriculum focuses on introductory organic and inorganic chemistry. Systematic naming of compounds and the ability to represent and interpret different representations of molecules are important themes throughout this unit. On completion of this unit students will have gained an understanding of:
Topics may include:
1. The basic features of organic chemistry, including how to write or draw simple organic formulas, how to classify and name organic compounds, and the concept of functional groups.
2. The reactivity of certain classes of organic compounds.
3. The use of instrumental methods including IR, MS and NMR to determine the structure of organic compounds.
4. Stereochemistry and the three dimensional arrangements of atoms in molecules, and how this arrangement

affects the chemistry and reactivity of molecules.
5. The basic structures and reactions of biologically important classes of organic compounds including carbohydrates, proteins and nucleic acids, as well as heterocycles.
6. The chemistry of transition metals and the formation of coordination complexes and their unique properties.
7. Crystal field theory and how it gives an insight into the electronic conformations and arrangements responsible for the origin of colour and magnetism in coordination complexes.

FEDTASKS

Federation University Federation recognises that students require key transferable employability skills to prepare them for their future workplace and society. FEDTASKS (**T**ransferable **A**ttributes **S**kills and **K**nowledge) provide a targeted focus on five key transferable Attributes, Skills, and Knowledge that are be embedded within curriculum, developed gradually towards successful measures and interlinked with cross-discipline and Co-operative Learning opportunities. *One or more FEDTASK, transferable Attributes, Skills or Knowledge must be evident in the specified learning outcomes and assessment for each FedUni Unit, and all must be directly assessed in each Course.*

FEDTASK attribute and descriptor		**Development and acquisition of FEDTASKS in the Unit**	
		Learning Outcomes (KSA)	**Assessment task (AT#)**
FEDTASK 1 Interpersonal	Students will demonstrate the ability to effectively communicate, inter-act and work with others both individually and in groups. Students will be required to display skills in-person and/or online in: • Using effective verbal and non-verbal communication • Listening for meaning and influencing via active listening • Showing empathy for others • Negotiating and demonstrating conflict resolution skills • Working respectfully in cross-cultural and diverse teams.	Not applicable	Not applicable
FEDTASK 2 Leadership	Students will demonstrate the ability to apply professional skills and behaviours in leading others. Students will be required to display skills in: • Creating a collegial environment • Showing self -awareness and the ability to self-reflect • Inspiring and convincing others • Making informed decisions • Displaying initiative	Not applicable	Not applicable
FEDTASK 3 Critical Thinking and Creativity	Students will demonstrate an ability to work in complexity and ambiguity using the imagination to create new ideas. Students will be required to display skills in: • Reflecting critically • Evaluating ideas, concepts and information • Considering alternative perspectives to refine ideas • Challenging conventional thinking to clarify concepts • Forming creative solutions in problem solving.	Not applicable	Not applicable

FEDTASK attribute and descriptor		Development and acquisition of FEDTASKS in the Unit	
		Learning Outcomes (KSA)	Assessment task (AT#)
FEDTASK 4 Digital Literacy	Students will demonstrate the ability to work fluently across a range of tools, platforms and applications to achieve a range of tasks. Students will be required to display skills in: • Finding, evaluating, managing, curating, organising and sharing digital information • Collating, managing, accessing and using digital data securely • Receiving and responding to messages in a range of digital media • Contributing actively to digital teams and working groups • Participating in and benefiting from digital learning opportunities.	Not applicable	Not applicable
FEDTASK 5 Sustainable and Ethical Mindset	Students will demonstrate the ability to consider and assess the consequences and impact of ideas and actions in enacting ethical and sustainable decisions. Students will be required to display skills in: • Making informed judgments that consider the impact of devising solutions in global economic environmental and societal contexts • Committing to social responsibility as a professional and a citizen • Evaluating ethical, socially responsible and/or sustainable challenges and generating and articulating responses • Embracing lifelong, life-wide and life-deep learning to be open to diverse others • Implementing required actions to foster sustainability in their professional and personal life.	Not applicable	Not applicable

Learning Task and Assessment:

Learning Outcomes Assessed	Assessment Tasks	Assessment Type	Weighting
K1, K2, K3, K4, K5, K6, S1, S5, A2	Students will demonstrate their understanding of the main concepts presented in the unit material and apply those concepts to problems and examples.	Final Examination/Test	40-60%
K1, K2, K3, K4, K5, K6, S1, S2, S3, S4, S5, A1, A2, A3	Students will demonstrate their practical laboratory skills and ability to communicate results in a number of forms.	Laboratory reports/presentations.	20-30%
S2	Attendance and participation in laboratory sessions to complete assessments of practical skills (See AT2).	≥80% engagement (and where required attendance) required to satisfy ongoing assessments.	Satisfactory/Unsatisfactory
K1, K2, K3, K4, K5, K6, S1, S5, A2	Students will demonstrate their ability to apply chemical concepts to simple problems and demonstrate problem solving skills developed during the unit.	On line quizzes and activities.	20-30%

Adopted Reference Style:

APA ()

Refer to the library website for more information

Fed Cite - referencing tool