Unit Outline (Higher Education)

Institute / School:	Institute of Innovation, Science & Sustainability
Unit Title:	CHEMISTRY II
Unit ID:	CHMGC1022
Credit Points:	15.00
Prerequisite(s):	Nil
Co-requisite(s):	Nil
Exclusion(s):	Nil
ASCED:	010599

Description of the Unit:

Within SCCHM 1002, students will build on introductory topics introduced in SCCHM 1001 to investigate organic and inorganic chemistry topics in more detail. On completion of this course students will have gained experience in 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 a laboratory program where students will have the opportunity to develop laboratory techniques and design their own experiments to solve a range of chemical problems.

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

Work Experience:

No work experience: Student is not undertaking work experience in industry.

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 and submitted all major assessment tasks.

CourseLevel:

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 and communicate the outcomes in an appropriate form, including written reports or presentations.

S3. Foster the acquisition of team work skills by working in small groups in peer-assisted learning scenarios, laboratory activities and presentations.

S4. 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 course. On completion of this course students will have gained an understanding of:

Topics may include:

- 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.
- The reactivity of certain classes of organic compounds.
- The use of instrumental methods including IR, MS and NMR to determine the structure of organic compounds.
- Stereochemistry and the three dimensional arrangements of atoms in molecules, and how this arrangement affects the chemistry and reactivity of molecules.
- The basic structures and reactions of biologically important classes of organic compounds

including carbohydrates, proteins and nucleic acids, as well as heterocycles.
- The chemistry of transition metals and the formation of coordination complexes and their unique properties.
- 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.

Graduate Attributes

The Federation University Federation graduate attributes (GA) are entrenched in the Higher Education Graduate Attributes Policy (LT1228). FedUni graduates develop these graduate attributes through their engagement in explicit learning and teaching and assessment tasks that are embedded in all FedUni Courses. Graduate attribute attainment typically follows an incremental development process mapped through Course progression. **One or more graduate attributes must be evident in the specified learning outcomes and assessment for each FedUni Unit, and all attributes must be directly assessed in each Course**

Graduate attribute and descriptor		Development and acquisition of GAs in the Unit	
		Learning Outcomes (KSA)	Assessment task (AT#)
GA 1 Thinkers	Our graduates are curious, reflective and critical. Able to analyse the world in a way that generates valued insights, they are change makers seeking and creating new solutions.	A1, A2	AT1, AT2
GA 2 Innovators	Our graduates have ideas and are able to realise their dreams. They think and act creatively to achieve and inspire positive change.	Not Applicable	Not Applicable
GA 3 Citizens	Our graduates engage in socially and culturally appropriate ways to advance individual, community and global well-being. They are socially and environmentally aware, acting ethically, equitably and compassionately.	S2	AT2
GA 4 Communicators	Our graduates create, exchange, impart and convey information, ideas, and concepts effectively. They are respectful, inclusive and empathetic towards their audience, and express thoughts, feelings and information in ways that help others to understand.	A1, A3	AT2
GA 5 Leaders	Our graduates display and promote positive behaviours, and aspire to make a difference. They act with integrity, are receptive to alternatives and foster sustainable and resilient practices.	Not Applicable	Not Applicable

Learning Task and Assessment:

Learning Outcomes Assessed	Assessment Tasks	Assessment Type	Weighting
K1-K6, S1, A1-A2	Students will demonstrate their understanding of the main concepts presented in the course material and apply those concepts to problems and examples.	Final examination.	50-60%
K1-K6, S1-S3, A1-A3	Students will demonstrate their practical laboratory skills and ability to communicate results in a number of forms.	Laboratory reports/presentations.	20-30%
K1-K6, S1, S4	Students will demonstrate their ability to apply chemical concepts to simple problems and demonstrate problem solving skills developed during the course.	On line quizzes and activities.	20-30%

Adopted Reference Style:

Australian Harvard

Refer to the library website for more information

Fed Cite - referencing tool