

Course Outline (Higher Education)

School: School of Science, Psychology and Sport

Course Title: CHEMISTRY 1

Course ID: SCCHM1001

Credit Points: 15.00

Prerequisite(s): Nil

Co-requisite(s): Nil

Exclusion(s): Nil

ASCED: 010599

Description of the Course :

The contents of this course focus on introductory level general and physical chemistry principles which in turn complements the topics covered in the subsequent course, SCCHM1002 in semester 2. On completion of SCCHM1001, students will have gained an understanding of atomic structure, how atoms and molecules interact with each other and how this affects their bonding, reactivity, 3D structure and physical properties. Understanding stoichiometry as well as intermolecular forces will be a focus of this course. A number of important topics such as thermodynamics, kinetics and equilibria, will be covered which will help to prepare students for a deeper exploration of chemistry in further courses. The concepts developed within lectures, workshops 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, etc.)

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 course but gained a final mark of 45 per cent or above and submitted all major assessment tasks.

Program Level:

Level of course in Program	AQF Level of Program					
	5	6	7	8	9	10
Introductory	<input type="checkbox"/>	<input type="checkbox"/>	✓	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Intermediate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Advanced	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Learning Outcomes:

Knowledge:

- K1.** Classify the states of matter and represent chemical and physical changes involved in transformations.
- K2.** Discuss the features of atomic structure and the construction of the periodic table of elements.
- K3.** Interpret relationships between electronic structure and bonding and recognise factors which give rise to polarity and its relationship to intermolecular bonding.
- K4.** Describe the composition of a chemical compound and be able to use the mole concept to solve quantitative problems in chemical reactions.
- K5.** Use models of chemical structures to explain the behaviour and properties of compounds.
- K6.** Explain the energy involved in chemical reactions and changes of state and use thermodynamics to be able to predict the direction of spontaneous change.
- K7.** Explain reaction kinetics at the macroscopic and microscopic level.
- K8.** Explain how equilibrium systems respond to change and solve quantitative problems involving equilibria.

Skills:

- S1.** Identify and interrelate chemistry at symbolic, observational and molecular levels.
- S2.** Demonstrate ability to conduct laboratory experiments safely and ethically and report the outcomes in an appropriate form.
- S3.** Write and balance chemical equations and use these to perform appropriate calculations.

Application of knowledge and skills:

- A1.** Apply theoretical knowledge to solve problems and conduct laboratory exercises and communicate their findings in a variety of ways including laboratory reports and presentations.
- A2.** Apply appropriate problem-solving techniques to solve problems both independently and within teams.
- A3.** Incorporate data collection and inference of its meaning to written reports.

Course Content:

The curriculum focuses on general chemistry principles as well as an introduction to physical chemistry topics of thermodynamics, kinetics and equilibria which will prepare students for both further study in chemistry as well as other scientific disciplines. On completion of SCCHM1001, students will have gained an understanding of:

Topics may include:

- Atomic structure, how atoms and molecules interact with each other and how this affects their bonding, reactivity, 3D structure and physical properties.
- Stoichiometry.
- Intermolecular forces.
- Thermodynamics, kinetics and equilibria.

Graduate Attributes

The Federation University FedUni 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 programs. Graduate attribute attainment typically follows an incremental development process mapped through program progression. **One or more graduate attributes must be evident in the specified learning outcomes and assessment for each FedUni course, and all attributes must be directly assessed in each program**

Graduate attribute and descriptor		Development and acquisition of GAs in the course			
		Learning Outcomes (KSA)	Code A. Direct B. Indirect N/A Not addressed	Assessment task (AT#)	Code A. Certain B. Likely C. Possible N/A Not likely
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.	A2, A3	A, A	AT2, AT3	A, A
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.	N/A	N/A	N/A	N/A
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	A	AT2	A
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	A, A	AT2	A
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.	N/A	N/A	N/A	N/A

Learning Task and Assessment:

Learning Outcomes Assessed	Learning Tasks	Assessment Type	Weighting
K1-K8, S1, S3	Demonstrate and apply knowledge from course content in response to questions	Examination	50-60%
K4-K8, S1-S3, A1-A3	Laboratory work.	Laboratory work and reports / presentations.	20-30%
K1-K8, S1, S3, A1, A2	On-line assessment.	On-line quizzes and activities.	20-30%

Adopted Reference Style:

Australian Harvard