Unit Outline (Higher Education)

Institute / School:	Institute of Innovation, Science & Sustainability
Unit Title:	Environmental Chemistry
Unit ID:	SCCHM2002
Credit Points:	15.00
Prerequisite(s):	(SCCHM1001)
Co-requisite(s):	Nil
Exclusion(s):	Nil
ASCED:	010503

Description of the Unit:

This unit applies chemical principles and concepts to current environmental issues. Students will study the sources, reactions, transport, effects and fate of chemical species in the water, soil and air environments. Case-studies and real-world examples will be used to investigate the influence of human activity upon the air, soil and water environment and the underlying chemistry associated with these problems. The unit will also provide relevant practical introduction to the basic analytical techniques employed for environmental chemical analysis.

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. Discuss parameters used to assess the quality of air, soil and water environments with reference to relevant environmental guidelines.

K2. Describe sources of pollution, including prevention and remediation options, in air, soil and water environments.

Skills:

S1. Assess water, soil and air quality in natural environments.

S2. Discuss tools and approaches for preventing or remediating environmental pollution in water, soil and air.

S3. Design appropriate sampling regimes and use a range of analytical techniques for chemical analysis of water, soil and air.

Application of knowledge and skills:

A1. Apply chemical principles to understand environmental issues in the air, soil and water environments

Unit Content:

This unit will cover three broad areas of environmental chemistry: natural waters, soil and the atmosphere. Topics may include:
1. Introduction to chemicals in the environment
2. Environmental sampling and analysis
3. Water (water quality parameters, water pollution and water treatment)
4. Soil (formation, structure and properties of soil, soil pollution and remediation)
5. The Atmosphere (air quality parameters, air pollution and the impacts on climate change and ozone depletion)

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 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, S1, S2, S3, A1	Tutorial and topic review activities	Online Activities	5-20%
K1, K2, S1, S2, S3, A1	Laboratory activities (sampling and analysis of water, soil and air)	Laboratory preparation, performance and reports	30-50%
K1, K2, S2, A1	Investigation into current research on an environmental pollution issue	Presentation of case study	10-20%
K1, K2, A1	Demonstrate and apply knowledge from the unit content in response to questions.	Test(s)	20-40%

Adopted Reference Style:

APA ()

Refer to the library website for more information

Fed Cite - referencing tool