

Unit Outline (Higher Education)

Institute / School: Institute of Innovation, Science and 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: 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, 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	■	■	✓	■	■	■

Level of Unit in Course	AQF Level of Course					
	5	6	7	8	9	10
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:

- Introduction to chemicals in the environment
- Environmental sampling and analysis
- Water (water quality parameters, water pollution and water treatment)
- Soil (formation, structure and properties of soil, soil pollution and remediation)
- 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**tttributes **S**kills and **K**nowledge) provide a targeted focus on five key transferable Attributes, Skills, and Knowledge that are 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 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, interact and work with others both individually and in groups. Students will be required to display skills in-person and/or online in: <ul style="list-style-type: none"> • 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. 	S1, S3	AT2
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: <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • 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 	K1, K2, S3	AT1, AT2
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: <ul style="list-style-type: none"> • 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 	K1, K2, S2, S3	AT1, AT2, AT3
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: <ul style="list-style-type: none"> • 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. 	K1, K2, S1, S2, S3	AT1, AT2, AT3, AT4

Learning Task and Assessment:

Learning Outcomes Assessed	Assessment Tasks	Assessment Type	Weighting
K1, K2, S1, S2, S3	Tutorial and topic review activities	Online activities	5-20%
K1, S1, S3	Laboratory activities (sampling and analysis of water, soil and air)	Laboratory preparation, performance and reports	20-40%
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)	30-50%

Adopted Reference Style:

APA

Refer to the [library website](#) for more information

Fed Cite - [referencing tool](#)