



Unit Outline (Higher Education)

Institute / School: Institute of Innovation, Science & Sustainability

Unit Title: HYDROLOGY

Unit ID: SCGEO2106

Credit Points: 15.00

Prerequisite(s): (ENCOR1015 or MATHS1000 or SCCOR1300)

Co-requisite(s): Nil

Exclusion(s): (SX628)

ASCED: 010711

Description of the Unit:

This unit exposes students to both surface and groundwater hydrology, and provides key insights into water resources, their use and importance, as well as the practical tools and skills to collect and interpret hydrological data in a range of settings.

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	<input type="checkbox"/>					
Intermediate	<input type="checkbox"/>	<input type="checkbox"/>	✓	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Advanced	<input type="checkbox"/>					

Learning Outcomes:

At the completion of this unit students will be able to:

Knowledge:

- K1.** Describe the terms, concepts and principles of hydrology for both surface and groundwater.
- K2.** Describe the components of the hydrological cycle and their measurement techniques.
- K3.** Describe and analyse conceptual models of the hydrological cycle at global, regional, and local scales.
- K4.** Discuss the role of water within our environment, society and economy.

Skills:

- S1.** Collect hydrological data in both surface and groundwater contexts.
- S2.** Conduct scientific investigations, analyse data and produce professional reports.
- S3.** Problem-solve surface and groundwater issues.

Application of knowledge and skills:

- A1.** Interpret hydrological systems from relevant ground and surface water data.
- A2.** Analyse and discuss the management of water resources.
- A3.** Interpret hydrological data sets and produce professional reports.

Unit Content:

Topics may include:

- Role of water on earth, water resources and society.
- Value of water, uses for water, legislative framework.
- Climate, earth systems, hydrologic cycle.
- Meteorology, precipitation and evapotranspiration.
- Surface water hydrology, river and streams, runoff, floods, storage.
- Groundwater hydrology, infiltration, groundwater flow, unsaturated zone, aquifers, aquifer characteristics and parameters, bore construction, aquifer testing.
- Hydrogeology, groundwater, groundwater flow systems, aquifers, aquifer characteristics and parameters, bore construction, aquifer testing.
- Water supply, quality and demand issues, extraction, irrigation, urban use.
- Water contamination and rehabilitation.

- Geotechnical aspects of groundwater, mine dewatering, other issues.

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 1 Interpersonal	<p>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:</p> <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. 	K1-K4, A2, A3	AT1, AT4
FEDTASK 2 Leadership	<p>Students will demonstrate the ability to apply professional skills and behaviours in leading others. Students will be required to display skills in:</p> <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	<p>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:</p> <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. 	K3, K4, S3, A2	AT1, AT2, AT3, AT4

FEDTASK attribute and descriptor		Development and acquisition of FEDTASKS in the Unit	
		Learning Outcomes (KSA)	Assessment task (AT#)
FEDTASK 4 Digital Literacy	<p>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:</p> <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. 	S1, S2, A1, A3	AT1
FEDTASK 5 Sustainable and Ethical Mindset	<p>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:</p> <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. 	K4	AT1, AT3

Learning Task and Assessment:

Learning Outcomes Assessed	Assessment Tasks	Assessment Type	Weighting
K2, S1, S2, S3, A1, A3	Practical assignments.	Assesses the student`s comprehension of the basic concepts, technical problem solving and application of the theory.	30-40%
K1, K2, K3, K4, A1, A3	Semester exam/test	Exam/Test	30-40%
S1, S3, A2	Field trip report.	Assesses a student`s practical understanding of water management in a mining environment.	10-15%
K1, K2, S2	Research essay.	Assesses a student`s capability for research and comprehension of theory.	10-15%

Adopted Reference Style:

APA

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

Fed Cite - [referencing tool](#)