

# Course Outline (Higher Education)

<b>School:</b>	School of Science, Engineering and Information Technology
<b>Course Title:</b>	HYDROLOGY
<b>Course ID:</b>	SCGEO2106
<b>Credit Points:</b>	15.00
<b>Prerequisite(s):</b>	(ENCOR1015 or SCCOR1300 or MATHS1000)
<b>Co-requisite(s):</b>	Nil
<b>Exclusion(s):</b>	(SX628)
<b>ASCED Code:</b>	010711

## Description of the Course :

This course 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, 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:

AQF Level of Program						
	5	6	7	8	9	10
Level						
Introductory	■	■	■	■	■	■
Intermediate	■	■	✓	■	■	■
Advanced	■	■	■	■	■	■

## Learning Outcomes:

At the completion of this course 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.

# Course Outline (Higher Education)

SCGEO2106 HYDROLOGY

- 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.

## Course 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.

## Values:

# Course Outline (Higher Education)

SCGEO2106 HYDROLOGY

- V1.** Appreciate the role and importance of water in the Earth`s environments and its management for sustaining environmental, economic and social values.
- V2.** Develop awareness of the value of water resources to the community.
- V3.** Appreciate the importance of professional conduct.

## Graduate Attributes:

FedUni graduate attributes statement. To have graduates with knowledge, skills and competence that enable them to stand out as critical, creative and enquiring learners who are capable, flexible and work ready, and responsible, ethical and engaged citizens.

Attribute	Brief Description	Focus
Knowledge, skills and competence	Understanding the role of water is key for describing any geological process. Students will apply this course as a stepping stone to more sophisticated methods of unraveling Earth processes.	Medium
Critical, creative and enquiring learners	This course provides opportunities to think critically, to conceptualise complex ideas and develop time management skills needed to meet deadlines. These attributes will aid the student`s confidence and capability to fulfill any future aspirations.	Medium
Capable, flexible and work ready	Hydrologists are in demand within Australia, as the demand for water resources continue to increase. The knowledge and skills taught in this course are considered core to all geologists.	Medium
Responsible, ethical and engaged citizens	Water management is a hot topic in Australia and the availability of drinking water is one of the major challenges to be faced in the future. Students are encouraged to manage water resources in accordance with long-term sustainability instead of individual interests.	High

## Learning Task and Assessment:

Learning Outcomes Assessed	Learning 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.	Assesses an individual`s knowledge and competency.	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:

Australian