



Course Outline (Higher Education)

School: School of Engineering, Information Technology and Physical Sciences

Course Title: MANAGEMENT OF WATER RESOURCES

Course ID: ENGIN4201

Credit Points: 15.00

Prerequisite(s): (ENGGC3204 or ENGIN3206)

Co-requisite(s): Nil

Exclusion(s): (ENGGC4203)

ASCED: 030907

Description of the Course :

Introduction to typical issues related to catchment/stream complexes; rural and urban land uses and their potential water quantity and quality impacts. Basic principles of water quantity modelling and use of industry standard computer models. Water quality management options including improved land management, water demand management, planning frameworks, and environmental and social aspects. Environmental and social aspects will be covered.

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

Level of course in Program	AQF Level of Program					
	5	6	7	8	9	10
Advanced	■	■	■	✓	■	■

Learning Outcomes:

Knowledge:

- K1.** Describe different elements of the hydrological cycle and their significance
- K2.** Describe fundamental elements of water resources management and terminology used
- K3.** Explain systems thinking and cause-effect analysis methods
- K4.** Discuss different multi-disciplinary aspects of water resource management using case studies
- K5.** Explain detailed explanation of Integrated water management
- K6.** Discuss different water and environmental management policies in context of Australia
- K7.** Understand different stakeholders and their roles and economic instruments used in water management
- K8.** Describe technologies used in water sensitive urban design for stormwater management

Skills:

- S1.** Analyse and evaluate different options for water resource management and decision making
- S2.** Use methods in statistics such as probability, uncertainty analysis, sensitivity analysis and contribution analysis
- S3.** Undertake economic analysis for water management projects
- S4.** Design projects in a holistic way using principles of integrated resource management

Application of knowledge and skills:

- A1.** Design water management projects in a holistic way
- A2.** Apply methods for the assessment of different options for water resource management projects
- A3.** Analyse data on different water management aspects and interpret it for decision making

Course Content:

- Introduction to management concepts
- Frameworks and cause effect analysis
- Non structural and economic instruments and analysis in water management
- System analysis
- Water and environmental management policies
- Water sensitive urban design technologies
- Integrated urban water management
- Water, energy and climate change
- Guest lectures
- Field visit

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.	K1-K8, S1-S3, A2, A3	A	4	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.	K3-K6, S2-S4, A1-A2	A	2	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.	K1-K3, K7-K8, S1-S4	B	1	B
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.	K3-K8, S2-S4, A1-A2	B	2, 3	B
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.	Not applicable	Not applicable	Not applicable	Not applicable

Learning Task and Assessment:

Learning Outcomes Assessed	Learning Tasks	Assessment Type	Weighting
K1-K3, K7-K8, S1-S4	Report on baseline water footprint for a household and field visits	Group assessment	15-20%
K3-K6, S2-S4, A1-A2	Design of a water management project	Group assessment	20%
K5-K8, S3-S4, A3	Presentation on water management issues	Individual assessment	10-15%

Learning Outcomes Assessed	Learning Tasks	Assessment Type	Weighting
Closed Book Examination (3 hours)	Closed Book Examination (3 hours): Students are required to achieve at least 45% in the total continuous assessment component (assignments, tests, mid-semester exams, laboratory reports) and at least 45% in the final examination component and an overall mark of 50% to achieve a pass grade in the unit. Students failing to achieve this requirement will be given a maximum of 45% in the unit.	Closed Book Examination (3 hours)	50%

Adopted Reference Style:

Other (IEEE)