

Unit Outline (Higher Education)

Institute / School: Institute of Innovation, Science & Sustainability

Unit Title: MANAGEMENT OF WATER RESOURCES

Unit ID: ENGIN4201

Credit Points: 15.00

Prerequisite(s): (ENGIN3203 for undergraduate Students only)

Co-requisite(s): Nil

Exclusion(s): (ENGGC4203)

ASCED: 030907

Description of the Unit:

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, 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"/> | <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"/> |
| Advanced | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

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

Unit 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

Learning Task and Assessment:

| Learning Outcomes Assessed | Assessment 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% |
| K1-K8, S1-S4, A1-A3 | 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)

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

Fed Cite - [referencing tool](#)