Unit Outline (Higher Education)

Institute / School:	Institute of Innovation, Science & Sustainability
Unit Title:	Water and Wastewater
Unit ID:	ENGIN3206
Credit Points:	15.00
Prerequisite(s):	(ENCIV2320 or ENGIN2201)
Co-requisite(s):	Nil
Exclusion(s):	(ENCIV3320)
ASCED:	030909

Description of the Unit:

The main objectives of the unit are to develop the knowledge & understanding, skills and attitudes associated with water and wastewater treatment systems in urban environments. To meet these objectives, there are a number of sub-objectives that need to be addressed. These are:

1. To understand elements of urban water and wastewater management systems -their functions, modes of operation, and design standards,

2. To acquire necessary skills to undertake engineering investigation and design of each of these elements, and

3. To acquire necessary skills to integrate them to form urban water and wastewater infrastructure to facilitate sustainable urban catchment development and water resource utilization.

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						
Advanced			✔			

Learning Outcomes:

On successful completion of the unit the students are expected to be able to:

Knowledge:

K1. Explain the concepts of sustainability as applied to waste and water management engineering

K2. Describe differences between different types of water and wastewaters

K3. Familiarise with parameters and methods used to define water quality

K4. Describe the characteristics of water and wastewater and explain the processes involved in the water and wastewater treatment

Skills:

S1. Calculate the wastewater outputs of communities and other organisations

S2. Analyse problems in water and wastewater treatment and design the major components of treatment systems

S3. Laboratory experiments to calculate optimum chemical dosage in jar test experiments and to evaluate filter`s hydraulic and treatment performances

S4. Design unit processes for water and wastewater treatment

Application of knowledge and skills:

A1. Estimating wastewater outputs and characteristics of communities and other organisations

A2. Design water supply treatment facilities and wastewater treatment facilities

A3. Apply concepts of sustainability and water conservation in the creation of water and wastewater treatment and management facilities.

A4. Apply concepts of efficiency and better water management

Unit Content:

Topics may include:

- Various water and wastewater systems in an urban environment
- Functions and modes of operation of urban water and wastewater systems and processes
- Influence of climate variability on urban requirements in terms of supply of potable water and disposal of wastewater

- Examination of the water supply system, stormwater management system, sewerage system and the interface between these systems.

- Different water quality parameters used to monitor quality

Learning Task and Assessment:

Learning Outcomes Assessed	Assessment Tasks	Assessment Type	Weighting
K1-K4, S1-S4, A1-A4	Field and/or plant visits to understand water management in industry.	Group assessment and/or presentation.	15 - 30%
K1-K4, S1-S4, A1-A4	A combination of problem based assignments and laboratory experiments.	Individual reports.	15 - 30%
K1-K4, S1-S4, A1-A4	An examination on any or all material covered in the unit.	Examination	40 - 60 %

Adopted Reference Style:

Other (IEEE: Refer to the library website for more information)

Refer to the library website for more information

Fed Cite - referencing tool