

# CIVL 3020 SUSTAINABLE WASTE ENGINEERING

**Credit Points** 10

**Legacy Code** 301422

**Coordinator** Dharma Hagare ([https://directory.westernsydney.edu.au/search/name/Dharma Hagare/](https://directory.westernsydney.edu.au/search/name/Dharma%20Hagare/))

**Description** Sustainable waste management is an important consideration for any student who is training to become an engineer, as waste is produced in all engineering fields. In this subject students will identify and characterise sources of solid and hazardous waste generated in the community. The application of circular economy and zero waste principles are examined alongside real-world case studies to focus on sustainable management of waste incorporating minimisation, recycle, recovery and disposable options.

**School** Eng, Design & Built Env

**Discipline** Water and Sanitary Engineering

**Student Contribution Band** HECS Band 2 10cp

Check your fees via the Fees ([https://www.westernsydney.edu.au/currentstudents/current\\_students/fees/](https://www.westernsydney.edu.au/currentstudents/current_students/fees/)) page.

**Level** Undergraduate Level 3 subject

**Equivalent Subjects** CIVL 4011 Waste Management

## Restrictions

Successful completion of 120 credit points.

## Learning Outcomes

On successful completion of this subject, students should be able to:

1. Analyse classification, transportation, storage and disposal of solid and hazardous waste.
2. Apply risk assessment principles to manage hazardous waste in a sustainable way.
3. Design landfill sites for both urban and rural areas using sound engineering principles.
4. Use life cycle analysis to determine appropriate options for waste disposal, and recovery and recycling of materials.
5. Determine appropriate circular economy and zero waste approaches to minimise waste generation.
6. Demonstrate communication and collaboration skills in working with others in an ethical and respectful manner to produce professional analyses and reports in sustainable waste engineering.

## Subject Content

1. Solid and hazardous waste classification, transportation and processing.
2. Treatment, reuse/ recovery and disposal options for solid and hazardous waste.
3. Risk assessment and management as applied to hazardous waste.
4. Landfill site location and design, and its sustainable management.
5. Contaminant transport and accumulation.
6. Application of life cycle analysis for evaluating waste disposal options, and recovery and recycling of materials.
7. Circular economy and its application in waste management.

8. Zero waste opportunities and technologies.

## Assessment

The following table summarises the standard assessment tasks for this subject. Please note this is a guide only. Assessment tasks are regularly updated, where there is a difference your Learning Guide takes precedence.

Type	Length	Percent	Threshold	Individual/ Group Task	Mandatory
Tutorial submissions	In-class submissions	20	N	Individual	
Project Report	5000 words including figures, tables and pictures	25	N	Individual	
Practical Report	1000 words including tables, figures and pictures	5	N	Individual	
Final Exam	3 hours	50	N	Individual	