

# CIVL 4021 SUSTAINABLE WASTE ENGINEERING

**Description** This subject explores the application of circular economy and zero waste principles alongside real-world case studies to focus on sustainable management of waste. Through a real-world design challenge students will apply learning to propose sustainable solutions that incorporate minimisation, recycling, recovery and disposable options. The skills and knowledge acquired in this subject can be applied to many career pathways including Engineering, Built Environment, and Science related disciplines.

**School** Eng, Design & Built Env

**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 4 subject

**Equivalent Subjects** CIVL 4011  
CIVL 3020

## Assumed Knowledge

It is assumed that the students have a good understanding of chemistry and engineering processes.

## Learning Outcomes

After successful completion of this Subject, students will be able to:

1. Analyse classification, transportation, storage and disposal of solid and hazardous waste.
2. Apply risk assessment principles to manage solid and 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/ technologies 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.
7. Identify waste management challenges in the context of local, national and international regulations/ guidelines.
8. Develop a business case incorporating economic, technical, environmental and social aspects for managing the waste.

## Subject Content

- Solid and hazardous waste production and its classification.
- Regulatory environment and the current technology in terms of reduction, reuse, recycling and disposal.
- Markets/ fate of recovered resources and its economic analysis.
- Evaluation of disposal options in terms environmental, economic and social aspects.
- License to operate waste management facilities.
- Risk assessment and management.

## 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
Practical	2000 words	20	N	Group
Report	5000 words including figures, tables and pictures And 3 minutes video	30	N	Group
Reflection	1000 words	20	N	Individual
Final Exam	3 hours	30	N	Individual