

# CIVL 3022 BRIDGE EMBANKMENT DESIGN

**Credit Points** 10

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

**Description** This subject focuses on the design of a real-world highway bridge approach embankment on soft ground. It aims to provide students with specialised knowledge covering ground improvement to support the approach embankment, characterisation of the foundation soil based on real site investigation data, loading combinations, settlement and stability considerations. The design will be taught with reference to relevant Australian and international design codes adopted by Australian industry. Industry speakers will be invited to provide industry perspective and insights of embankment design. The knowledge and skills developed in this subject will prepare students for roles as geotechnical design engineers.

**School** Eng, Design & Built Env

**Discipline** Geotechnical Engineering

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

Check your HECS Band contribution amount 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

**Pre-requisite(s)** CIVL 2012 Soil Mechanics  
AND  
ENGR 2016 Pavement Materials and Design

## Restrictions

Students must complete 160 credit points before enrolling into this subject.

## Learning Outcomes

1. Apply soil mechanics and geotechnical engineering principles in bridge approach embankment design.
2. Interpret soil properties and soil test data for use in geotechnical analysis and design.
3. Use engineering software in geotechnical analysis, simulation and design.
4. Integrate relevant Australian and international standards in the design of approach embankment.
5. Collaborate with team members and others in a respectful and responsible manner, each being accountable for their individual contributions.

## Subject Content

1. Introduction of bridge approach embankment
2. Characterisation of foundation soil
3. Ground improvement techniques
4. Stability analysis
5. Settlement analysis
6. Design criteria and standards

## 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	2 hours (per practical)	10	Y	Individual
Quiz	1.5 hours	30	N	Individual
Report	25-30 pages (including calculations and diagrams)	60	N	Group

Teaching Periods

## Spring (2023)

### Penrith (Kingswood)

#### Hybrid

**Subject Contact** Chin Leo ([https://directory.westernsydney.edu.au/search/name/Chin Leo/](https://directory.westernsydney.edu.au/search/name/Chin%20Leo/))

View timetable ([https://classregistration.westernsydney.edu.au/odd/timetable/?subject\\_code=CIVL3022\\_23-SPR\\_KW\\_3#subjects](https://classregistration.westernsydney.edu.au/odd/timetable/?subject_code=CIVL3022_23-SPR_KW_3#subjects))

### Parramatta City - Macquarie St

#### Hybrid

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