

# CIVL 7004 ADVANCED HIGHWAY INFRASTRUCTURE

**Credit Points** 10

**Legacy Code** 301011

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

**Description** This subject teaches pavement and ground engineering design as part of highway construction. Students will develop advanced knowledge and skills in designing pavement structures and ground improvement techniques dealing with soft and weak grounds related to the construction of highway pavements and embankments. Students will apply their knowledge and skills in accordance with Australian standards and practices. The knowledge and skills developed in this subject will provide students with opportunities in careers such as in ground engineering including those involving design, construction and maintenance of highway infrastructures.

**School** Eng, Design & Built Env

**Discipline** Geotechnical 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** Postgraduate Coursework Level 7 subject

## Restrictions

Students must be enrolled in a postgraduate program.

## Assumed Knowledge

Soil mechanics at undergraduate level.

## Learning Outcomes

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

1. Apply principles of mechanics in pavement design.
2. Analyse soil principles for ground engineering and embankment design.
3. Evaluate soil properties and soil test data in geotechnical analysis and design.
4. Design highway infrastructures integrating relevant engineering principles using engineering software and Australian practices.
5. Collaborate with people from diverse backgrounds, both specialist and non-specialist, to achieve objectives of tasks.
6. Communicate analyses and recommendations in a formal report using appropriate technical and diagrammatic specifications.

## Subject Content

Pavement Design Module:

1. Asphalt mix design
2. Flexible pavement design
3. Rigid pavement design

Highway Embankment and ground improvement Module:

1. Soft soil remediation
2. Ground improvement techniques
3. Earth fills and retaining structures

## 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
Participation	2 hours (each week)	10	N	Individual	N
Report	25 pages	30	N	Group	Y
Report	15 pages	20	N	Individual	N
Quiz	1 hour (per quiz)	40	N	Individual	N

Teaching Periods

## Autumn (2025)

**Parramatta City - Macquarie St**

### On-site

**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=CIVL7004\\_25-AUT\\_PC\\_1#subjects](https://classregistration.westernsydney.edu.au/odd/timetable/?subject_code=CIVL7004_25-AUT_PC_1#subjects))