

## In Progress

Please note that this Unit Profile is still in progress. The content below is subject to change.



# ENEC20004 Advanced Transportation Engineering Design

## Term 2 - 2022

Profile information current as at 29/04/2024 10:49 am

All details in this unit profile for ENEC20004 have been officially approved by CQUniversity and represent a learning partnership between the University and you (our student). The information will not be changed unless absolutely necessary and any change will be clearly indicated by an approved correction included in the profile.

## General Information

### Overview

Advanced Transportation Engineering Design will prepare you to analyse and solve complex transportation problems. You will develop strategies for analysing, managing and controlling traffic; identifying safety issues; and recommending solutions. In this unit, you will apply relevant industrial design standards and guides to solve complex traffic and pavement analysis and design problems involving highway capacity analysis, intersection design and pavement design by considering stakeholders and sustainability requirements. You will also use appropriate industry-relevant software for analysis and design. You are required to work, learn, and communicate effectively in a professional manner, independently and in project teams.

### Details

Career Level: *Postgraduate*

Unit Level: *Level 9*

Credit Points: 12

Student Contribution Band: 8

Fraction of Full-Time Student Load: 0.25

### Pre-requisites or Co-requisites

There are no requisites for this unit.

Important note: Students enrolled in a subsequent unit who failed their pre-requisite unit, should drop the subsequent unit before the census date or within 10 working days of Fail grade notification. Students who do not drop the unit in this timeframe cannot later drop the unit without academic and financial liability. See details in the [Assessment Policy and Procedure \(Higher Education Coursework\)](#).

### Offerings For Term 2 - 2022

No offerings for ENEC20004

### Attendance Requirements

All on-campus students are expected to attend scheduled classes – in some units, these classes are identified as a mandatory (pass/fail) component and attendance is compulsory. International students, on a student visa, must maintain a full time study load and meet both attendance and academic progress requirements in each study period (satisfactory attendance for International students is defined as maintaining at least an 80% attendance record).

### Website

[This unit has a website, within the Moodle system, which is available two weeks before the start of term. It is important that you visit your Moodle site throughout the term. Please visit Moodle for more information.](#)

## Class and Assessment Overview

### Recommended Student Time Commitment

Each 12-credit Postgraduate unit at CQUniversity requires an overall time commitment of an average of 25 hours of study per week, making a total of 300 hours for the unit.

### Class Timetable

#### [Regional Campuses](#)

Bundaberg, Cairns, Emerald, Gladstone, Mackay, Rockhampton, Townsville

#### [Metropolitan Campuses](#)

Adelaide, Brisbane, Melbourne, Perth, Sydney

### Assessment Overview

#### Assessment Grading

This is a graded unit: your overall grade will be calculated from the marks or grades for each assessment task, based on the relative weightings shown in the table above. You must obtain an overall mark for the unit of at least 50%, or an overall grade of 'pass' in order to pass the unit. If any 'pass/fail' tasks are shown in the table above they must also be completed successfully ('pass' grade). You must also meet any minimum mark requirements specified for a particular assessment task, as detailed in the 'assessment task' section (note that in some instances, the minimum mark for a task may be greater than 50%). Consult the [University's Grades and Results Policy](#) for more details of interim results and final grades.

## CQUniversity Policies

**All University policies are available on the [CQUniversity Policy site](#).**

You may wish to view these policies:

- Grades and Results Policy
- Assessment Policy and Procedure (Higher Education Coursework)
- Review of Grade Procedure
- Student Academic Integrity Policy and Procedure
- Monitoring Academic Progress (MAP) Policy and Procedure – Domestic Students
- Monitoring Academic Progress (MAP) Policy and Procedure – International Students
- Student Refund and Credit Balance Policy and Procedure
- Student Feedback – Compliments and Complaints Policy and Procedure
- Information and Communications Technology Acceptable Use Policy and Procedure

This list is not an exhaustive list of all University policies. The full list of University policies are available on the [CQUniversity Policy site](#).

## Previous Student Feedback

### Feedback, Recommendations and Responses

Every unit is reviewed for enhancement each year. At the most recent review, the following staff and student feedback items were identified and recommendations were made.

#### Feedback from In-class discussions

**Feedback**

The unit is practical and resembles the real-world professional design and analysis scenarios.

**Recommendation**

Continue to make the unit authentic and practical.

#### Feedback from Student performance

**Feedback**

The traffic analysis and pavement design problems are complex.

**Recommendation**

Provide simplified and clearly defined traffic analysis and pavement design scenarios without compromising learning outcomes.

## Unit Learning Outcomes

### On successful completion of this unit, you will be able to:

1. Analyse traffic system components and traffic flows to identify key traffic flow parameters and their inter-relationships
2. Apply systematic approaches to conduct capacity analysis and level of service of roadways and intersections
3. Evaluate the pavement sublayer materials properties using appropriate Australian Standards and guidelines
4. Design structural road pavements using appropriate Australian Standards and guidelines
5. Formulate, plan, manage and complete projects individually or in teams in an ethical and professional manner considering stakeholder requirements and principles of sustainable development
6. Demonstrate a professional level of communication and leadership.

The Learning Outcomes for this unit are linked with the Engineers Australia Stage 1 Competency Standards for Professional Engineers in the areas of 1. Knowledge and Skill Base, 2. Engineering Application Ability and 3. Professional and Personal Attributes at the following levels:

#### Introductory

3.4 Professional use and management of information. (LO: 6N )

#### Intermediate

1.2 Conceptual understanding of the mathematics, numerical analysis, statistics, and computer and information sciences which underpin the engineering discipline. (LO: 1I 2I 3N )

1.5 Knowledge of engineering design practice and contextual factors impacting the engineering discipline. (LO: 4I )

1.6 Understanding of the scope, principles, norms, accountabilities and bounds of sustainable engineering practice in the specific discipline. (LO: 4I )

2.4 Application of systematic approaches to the conduct and management of engineering projects. (LO: 4I 5I )

3.2 Effective oral and written communication in professional and lay domains. (LO: 6I )

3.6 Effective team membership and team leadership. (LO: 5N 6I )

#### Advanced

1.1 Comprehensive, theory-based understanding of the underpinning natural and physical sciences and the engineering fundamentals applicable to the engineering discipline. (LO: 1A 2A 3N )

1.3 In-depth understanding of specialist bodies of knowledge within the engineering discipline. (LO: 1A 2A 3I )

1.4 Discernment of knowledge development and research directions within the engineering discipline. (LO: 1A 2A 3I )

2.1 Application of established engineering methods to complex engineering problem solving. (LO: 4A )

2.2 Fluent application of engineering techniques, tools and resources. (LO: 4A 5A )

2.3 Application of systematic engineering synthesis and design processes. (LO: 4A 5A )

*Note: LO refers to the Learning Outcome number(s) which link to the competency and the levels: N - Introductory, I - Intermediate and A - Advanced.*

Refer to the Engineering Postgraduate Units Moodle site for further information on the Engineers Australia's Stage 1 Competency Standard for Professional Engineers and course level mapping information

<https://moodle.cqu.edu.au/course/view.php?id=11382>

## Alignment of Learning Outcomes, Assessment and Graduate Attributes



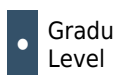
N/A  
Level



Introductory  
Level



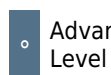
Intermediate  
Level



Graduate  
Level



Professional  
Level



Advanced  
Level

### Alignment of Assessment Tasks to Learning Outcomes

| Assessment Tasks            | Learning Outcomes |   |   |   |   |   |
|-----------------------------|-------------------|---|---|---|---|---|
|                             | 1                 | 2 | 3 | 4 | 5 | 6 |
| 1 - Project (applied) - 30% | •                 | • |   |   | • | • |

| Assessment Tasks            | Learning Outcomes |   |   |   |   |   |
|-----------------------------|-------------------|---|---|---|---|---|
|                             | 1                 | 2 | 3 | 4 | 5 | 6 |
| 2 - Project (applied) - 30% |                   |   | • | • | • | • |
| 3 - In-class Test(s) - 40%  | •                 | • | • | • |   |   |

## Alignment of Graduate Attributes to Learning Outcomes

| Graduate Attributes                                | Learning Outcomes |   |   |   |   |   |
|--|-------------------|---|---|---|---|---|
|  | 1                 | 2 | 3 | 4 | 5 | 6 |
| 1 - Knowledge                                      | ○                 | ○ | ○ | ○ |   |   |
| 2 - Communication                                  | ○                 | ○ |   | ○ | ○ | ○ |
| 3 - Cognitive, technical and creative skills       | ○                 | ○ | ○ | ○ | ○ |   |
| 4 - Research                                       | ○                 | ○ | ○ | ○ | ○ |   |
| 5 - Self-management                                | ○                 | ○ | ○ | ○ | ○ |   |
| 6 - Ethical and Professional Responsibility        |                   |   |   |   |   |   |
| 7 - Leadership                                     |                   |   |   |   | ○ | ○ |
| 8 - Aboriginal and Torres Strait Islander Cultures |                   |   |   |   |   |   |

## Alignment of Assessment Tasks to Graduate Attributes

| Assessment Tasks            | Graduate Attributes |   |   |   |   |   |   |   |
|-----------------------------|---------------------|---|---|---|---|---|---|---|
|                             | 1                   | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 1 - Project (applied) - 30% | ○                   | ○ | ○ | ○ | ○ |   |   |   |
| 2 - Project (applied) - 30% | ○                   | ○ | ○ | ○ | ○ |   |   |   |
| 3 - In-class Test(s) - 40%  | ○                   | ○ | ○ |   | ○ |   |   |   |

## Textbooks and Resources

### Textbooks

Information for Textbooks is not yet available.

The textbooks have not yet been finalised.

### IT Resources

**You will need access to the following IT resources:**

## Referencing Style

Information for Referencing Style has not been released yet.

This unit profile has not yet been finalised.

## Teaching Contacts

Information for Teaching Contacts has not been released yet.

This unit profile has not yet been finalised.

## Assessment Tasks

Information for Assessment Tasks has not been released yet.

This unit profile has not yet been finalised.

## Academic Integrity Statement

Information for Academic Integrity Statement has not been released yet.

This unit profile has not yet been finalised.