



ENEC14016 Traffic and Transportation Engineering

Term 1 - 2018

Profile information current as at 23/04/2024 06:14 pm

All details in this unit profile for ENEC14016 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

This project-based learning unit prepares you to describe and explain the fundamental concepts and characteristics of traffic engineering systems. You will be able to develop strategies for managing and controlling traffic, identify safety issues and recommend solutions. You will be able to analyse and design intersections. You will use ethical decision-making processes to design and document pavement requirements. You will apply design codes and manuals to common design problems involving, intersection design and pavement design. You are required to work, learn and communicate effectively in a professional manner, alone and in project teams. You are required to use information literacy skills proficiently to investigate and prepare oral presentations and formal technical reports. If you are enrolled in distance mode, you will be required to attend a residential school during the term.

Details

Career Level: *Undergraduate*

Unit Level: *Level 4*

Credit Points: *12*

Student Contribution Band: *8*

Fraction of Full-Time Student Load: *0.25*

Pre-requisites or Co-requisites

Prerequisites: [MATH11218 OR MATH11219] AND ENEC12011

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 1 - 2018

- Bundaberg
- Cairns
- Gladstone
- Mackay
- Mixed Mode
- Rockhampton

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).

Residential Schools

This unit has a Compulsory Residential School for distance mode students and the details are:

Click here to see your [Residential School Timetable](#).

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 Undergraduate 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

1. **Portfolio**

Weighting: 50%

2. **Portfolio**

Weighting: 50%

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 Course Evaluation

Feedback

Quick response time to student

Recommendation

The good practice of encouraging students to use the forum in asking questions will be continued. The practice of reviewing posts on the Q & A forum daily, with the view to promptly responding, will be also continued.

Feedback from Course Evaluation

Feedback

Clarity with Portfolio assessment requirement.

Recommendation

The use of the Moodle Quiz format to generate customised questions for individuals will be continued. This format saw the greatest change in student evaluation from 2.3 to 4.0, the University preferred target.

Feedback from Course Evaluation

Feedback

The use of ZOOM for interactive communication

Recommendation

The creation of ZOOM interactive platform links within the unit Moodle page will be continued. This proved to be popular with the students and those located in different places were collaborating constantly.

Unit Learning Outcomes

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

1. Analyse traffic flows and describe the effect of 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 guidelines
4. Design structural road pavements using appropriate Australian guidelines
5. Demonstrate a professional level of communication and team work

The Learning Outcomes for this unit are linked with **Engineers Australia's Stage 1 Competency Standard.**

Textbooks and Resources

Textbooks

ENEC14016

Supplementary

Traffic and Highway Engineering, SI Edition

Edition: 5 (2015)

Authors: Nicholas J. Garber & Lester A. Hoel

Cengage Learning US

Stamford , USA

ISBN: 9781133607083

Binding: Paperback

Additional Textbook Information

[View textbooks at the CQUniversity Bookshop](#)

IT Resources

You will need access to the following IT resources:

- CQUniversity Student Email
- Internet
- Unit Website (Moodle)
- Pavement Design Software CIRCLY
- SIDRA Software

Referencing Style

All submissions for this unit must use the referencing style: [Harvard \(author-date\)](#)

For further information, see the Assessment Tasks.

Teaching Contacts

Jerome Egwurube Unit Coordinator

j.egwurube@cqu.edu.au

Schedule

Week 1 - 05 Mar 2018

Module/Topic	Chapter	Events and Submissions/Topic
Traffic Flow Relationships	1. Traffic & Highway Engineering by Garber and Hoel SI Edition Chapter 6; 2. Guide to Traffic Management Part 2: Traffic Theory (AGTM02-15) Chapter 2 Basic Traffic Variables and Relationships pages 3 to 9; 3. Guide to Traffic Management Part 2: Traffic Theory (AGTM02-15) Commentary 1 & 2 pages 90 to 92 4. Guide to Traffic Management Part 2: Traffic Theory (AGTM02-15) Chapter 7 pages 50 to 72	

Week 2 - 12 Mar 2018

Module/Topic	Chapter	Events and Submissions/Topic
--------------	---------	------------------------------

Capacity and Level of Service Concepts	1. Highway Capacity Manual (2010) Chapters 4 &5; 2. Guide to Traffic Management Part 3: Traffic Studies and Analysis (AGTM03-13) Chapter 3 & 4 pages 28 to 56	Quiz 1:Traffic Flow Relationship due on Friday 16/03/2018 @ 17:00 Traffic Flow Relationship workbook due on Friday 16/03/2018 @ 17:00
--	--	--

Week 3 - 19 Mar 2018

Module/Topic	Chapter	Events and Submissions/Topic
Highway Capacity Analysis	1. Highway Capacity Manual (2010) Chapters14 & 15; 2. Guide to Traffic Management Part 3: Traffic Studies and Analysis (AGTM03-13) Chapter 4 pages 40 to 46 3. Traffic & Highway Engineering by Garber and Hoel SI 5th Edition Chapter 9 pages 465 to 493	Quiz 2:Capacity Analysis of two lanes and multilanes due Friday 23/03/2018 @ 17:00

Week 4 - 26 Mar 2018

Module/Topic	Chapter	Events and Submissions/Topic
Freeway Capacity Analysis: Facilities and Basic Segment	1. Highway Capacity Manual (2010) Chapters10 & 11 2. Guide to Traffic Management Part 3: Traffic Studies and Analysis (AGTM03-13) Chapter 4 pages 48 to 56 3. Traffic & Highway Engineering by Garber and Hoel SI 5th Edition Chapter 9 pages 447 to 465	Task 1: Capacity Analysis release

Week 5 - 02 Apr 2018

Module/Topic	Chapter	Events and Submissions/Topic
Freeway Capacity Analysis: Merge, Diverge and Weaving Segment	Highway Capacity Manual (2010) Chapters12 & 13	

Vacation Week - 09 Apr 2018

Module/Topic	Chapter	Events and Submissions/Topic

Week 6 - 16 Apr 2018

Module/Topic	Chapter	Events and Submissions/Topic
Signalized & Unsignalised Intersection Capacity Analysis	1. Guide to Traffic Management Part 3: Traffic Studies and Analysis (AGTM03-13) Section 6.1 & 6.2 pages 66 to 75 2. Guide to Traffic Management Part 6: Traffic Studies and Analysis (AGTM06-13) Chapter 4 pages 60 to 79 3. Guide to Traffic Management Part 6: Traffic Studies and Analysis (AGTM06-13) Chapter 5 4. Traffic & Highway Engineering by Garber and Hoel SI 5th Edition Chapter 8 &10	Quiz 3: Freeway Capacity due on Friday 20/04/2018 @ 17:00 Task 1: Capacity Analysis due on Friday 20/04/2018 @ 17:00

Week 7 - 23 Apr 2018

Module/Topic	Chapter	Events and Submissions/Topic
Design of Rigid Pavement	AGPT02-17 Chapter 9;	Task 2: SIDRA Report due on Friday 27/04/2018 @ 17:00 Traffic Engineering Portfolio Due: Week 7 Friday (27 Apr 2018) 5:00 pm AEST

Week 8 - 30 Apr 2018

Module/Topic	Chapter	Events and Submissions/Topic
Granular Overlay Design on Flexible Pavement	AGPT05-11 Chapter 6.2	

Week 9 - 07 May 2018

Module/Topic	Chapter	Events and Submissions/Topic
Asphalt Overlay Design on Flexible Pavement	AGPT05-11 Chapter 6.2;	

Week 10 - 14 May 2018

Module/Topic	Chapter	Events and Submissions/Topic
General Mechanistic Procedure (GMP) for Flexible Overlays Design	AGPT05-11 Chapter 6.3;	

Week 11 - 21 May 2018

Module/Topic	Chapter	Events and Submissions/Topic
Thickness Design of Stabilization Treatments	AGPT05-11 Chapter 7;	

Week 12 - 28 May 2018

Module/Topic	Chapter	Events and Submissions/Topic
Review		Quiz 4 due on Friday 01/06/2018 @ 17:00 Laboratory Report due on Friday 01/06/2018 @ 17:00 Pavement Design Portfolio due on Friday 01/06/2018 @ 17:00

Review/Exam Week - 04 Jun 2018

Module/Topic	Chapter	Events and Submissions/Topic
		Pavement Design Portfolio Due: Review/Exam Week Monday (4 June 2018) 9:00 am AEST

Exam Week - 11 Jun 2018

Module/Topic	Chapter	Events and Submissions/Topic

Term Specific Information

General Information

1. Answer Moodle quiz in the relevant modules.
2. Additional unit details are provided in the Moodle unit page

Communication with Lecturer

- All unit related questions must be asked through appropriate forums or during the scheduled class time. No email will be responded for any queries related to this unit unless those are private in circumstances.
- All emails related to this unit should have the unit code (ENEC14016) in the subject line. Any email without unit code in the subject line may not be responded.

Example: ENEC14016: Moodle Quiz

Laboratory Time Table

Practical Classes for on-campus students will be scheduled from week 5. Due to the multi-campus delivery of the unit, detail of the laboratory timetable will be available from unit website separately in Week 3. Distance students will complete all practicals during the residential school.

Assessment Tasks

1 Traffic Engineering Portfolio

Assessment Type

Portfolio

Task Description

This portfolio contribute 50 marks out of 100 marks. It consist of three independent assessment task. **This assessment focus on weeks 1 to 6 content.**

1. Workbook Task (10 marks out of 50): This is an individual activity. You will be required to complete 3 Moodle quizzes. For each quiz you will have only two attempts that would have time limit. You will also complete one workbook question
2. Capacity Analysis Task (30 marks out of 50): This is an individual activity. Each student will be provided individual data for each of the questions categories. This will be generated through Moodle Quiz.
3. SIDRA Analysis Task (10 marks out of 50): This is a team activity. You will be expected to apply SIDRA software to analyse selected intersections

More details are provided in Moodle

Assessment Due Date

Week 7 Friday (27 Apr 2018) 5:00 pm AEST

Return Date to Students

Week 9 Monday (7 May 2018)

Weighting

50%

Minimum mark or grade

50

Assessment Criteria

The marking matrix shall be based on the content consisting of the following principles. Each sequential step shall be allocated marks proportionately

1. Accuracy of Input parameter for each computation step with appropriate unit. Marks will only be awarded for correct input
2. Application of accurate methodology with appropriate referencing. Full mark will only be awarded for error free computational steps with appropriate explanation to be understood by an independent person.
3. Accuracy of answer with appropriate unit. Zero mark will be awarded with error in either Input or methodology.
4. If answers to any proceeding steps are inaccurate. Zero mark be awarded for subsequent answers.

Additional information should be obtained from the Moodle Unit web-page

Referencing Style

- [Harvard \(author-date\)](#)

Submission

Online

Learning Outcomes Assessed

- Analyse traffic flows and describe the effect of key traffic flow parameters and their inter-relationships
- Apply systematic approaches to conduct capacity analysis and level of-service of roadways and intersections
- Demonstrate a professional level of communication and team work

Graduate Attributes

- Communication
- Problem Solving

- Critical Thinking
- Information Literacy
- Team Work
- Information Technology Competence
- Cross Cultural Competence
- Ethical practice

2 Pavement Design Portfolio

Assessment Type

Portfolio

Task Description

This portfolio contribute 50 marks out of 100 marks. It consist of five independent assessment task.

1. Quiz (5 marks out of 50)
2. Laboratory Activity and Report (5 out of 50 marks)
3. Design Task 1: Rigid Pavement Design (20 marks out of 50)
4. Design Task 2: Structural Overlay Design (10 marks out of 50)
5. Design Task 3: Thickness Design of Stabilization treatment (10 marks out of 50)

Please refer to Moodle for more details

Assessment Due Date

Review/Exam Week Monday (4 June 2018) 9:00 am AEST

Return Date to Students

After two weeks

Weighting

50%

Minimum mark or grade

50

Assessment Criteria

The marking matrix shall be based on the content consisting of the following principles. Each sequential step shall be allocated marks proportionately

1. Accuracy of Input parameter for each computation step with appropriate unit. Marks will only be awarded for correct input
2. Application of accurate methodology with appropriate referencing. Full mark will only be awarded for error free computational steps with appropriate explanation to be understood by an independent person.
3. Accuracy of answer with appropriate unit. Zero mark will be awarded with error in either Input or methodology.
4. If answers to any proceeding steps are inaccurate. Zero mark be awarded for subsequent answers.

Additional information should be obtained from the Moodle Unit web-page

Referencing Style

- [Harvard \(author-date\)](#)

Submission

Online

Learning Outcomes Assessed

- Evaluate the pavement sublayer materials properties using appropriate Australian guidelines
- Design structural road pavements using appropriate Australian guidelines
- Demonstrate a professional level of communication and team work

Graduate Attributes

- Communication
- Problem Solving
- Critical Thinking
- Information Literacy
- Team Work
- Information Technology Competence
- Cross Cultural Competence
- Ethical practice

Academic Integrity Statement

As a CQUniversity student you are expected to act honestly in all aspects of your academic work.

Any assessable work undertaken or submitted for review or assessment must be your own work. Assessable work is any type of work you do to meet the assessment requirements in the unit, including draft work submitted for review and feedback and final work to be assessed.

When you use the ideas, words or data of others in your assessment, you must thoroughly and clearly acknowledge the source of this information by using the correct referencing style for your unit. Using others' work without proper acknowledgement may be considered a form of intellectual dishonesty.

Participating honestly, respectfully, responsibly, and fairly in your university study ensures the CQUniversity qualification you earn will be valued as a true indication of your individual academic achievement and will continue to receive the respect and recognition it deserves.

As a student, you are responsible for reading and following CQUniversity's policies, including the [Student Academic Integrity Policy and Procedure](#). This policy sets out CQUniversity's expectations of you to act with integrity, examples of academic integrity breaches to avoid, the processes used to address alleged breaches of academic integrity, and potential penalties.

What is a breach of academic integrity?

A breach of academic integrity includes but is not limited to plagiarism, self-plagiarism, collusion, cheating, contract cheating, and academic misconduct. The Student Academic Integrity Policy and Procedure defines what these terms mean and gives examples.

Why is academic integrity important?

A breach of academic integrity may result in one or more penalties, including suspension or even expulsion from the University. It can also have negative implications for student visas and future enrolment at CQUniversity or elsewhere. Students who engage in contract cheating also risk being blackmailed by contract cheating services.

Where can I get assistance?

For academic advice and guidance, the [Academic Learning Centre \(ALC\)](#) can support you in becoming confident in completing assessments with integrity and of high standard.

What can you do to act with integrity?



Be Honest

If your assessment task is done by someone else, it would be dishonest of you to claim it as your own



Seek Help

If you are not sure about how to cite or reference in essays, reports etc, then seek help from your lecturer, the library or the Academic Learning Centre (ALC)



Produce Original Work

Originality comes from your ability to read widely, think critically, and apply your gained knowledge to address a question or problem