



ENEC13016 Concrete Technology and Design

Term 2 - 2017

Profile information current as at 01/05/2024 05:58 pm

All details in this unit profile for ENEC13016 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 unit introduces you to the design of concrete structures, including structural components such as beams, slabs, columns, footings and retaining walls. You will identify loads and load paths for gravity and lateral loading. Construction materials are also reviewed in the context of sustainability and environmental issues. You will also plan, prepare and carry out tests on structural concrete components, interpret the results and prepare test reports. Building design and serviceability requirements are integrated in the design process. Individual and team work focuses on development of professionalism, ethical practice, problem solving and communication. Students enrolled in distance mode are required to attend a compulsory Residential School.

Details

Career Level: *Undergraduate*

Unit Level: *Level 3*

Credit Points: 6

Student Contribution Band: 8

Fraction of Full-Time Student Load: 0.125

Pre-requisites or Co-requisites

Prerequisites: (ENEC12012 Stress Analysis or ENEC13010 Solid Mechanics) AND MATH11218 Applied Mathematics

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 - 2017

- Bundaberg
- Distance
- Gladstone
- Mackay
- 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 6-credit Undergraduate unit at CQUniversity requires an overall time commitment of an average of 12.5 hours of study per week, making a total of 150 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. **Written Assessment**

Weighting: 20%

2. **In-class Test(s)**

Weighting: 40%

3. **Practical and Written Assessment**

Weighting: 40%

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](#).

Unit Learning Outcomes

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

1. Select and specify materials for concrete structures in the context of sustainability and environmental issues and required structural performance
2. Determine identify load paths in structural systems for gravity and lateral loading
3. Explain the limit state design process and check for ultimate limit state and serviceability limit state requirements in reinforced concrete design
4. Design reinforced concrete beams, slabs, columns and retaining walls according to Australian Standard
5. Plan, test and interpret results of tests on structural materials and prepare test reports
6. Demonstrate a professional level of communication and teamwork

The learning outcomes are linked to Engineers Australia Stage 1 Competencies and also discipline capabilities. You can find the mapping for this on the [Engineering Undergraduate Course website](#).

Alignment of Learning Outcomes, Assessment and Graduate Attributes



Alignment of Assessment Tasks to Learning Outcomes

Assessment Tasks	Learning Outcomes					
	1	2	3	4	5	6
1 - Written Assessment - 20%	•	•	•	•		•
2 - In-class Test(s) - 40%	•	•	•	•		•
3 - Practical and Written Assessment - 40%	•	•	•	•	•	•

Alignment of Graduate Attributes to Learning Outcomes

Graduate Attributes	Learning Outcomes					
	1	2	3	4	5	6
1 - Communication	•	•	•	•	•	•
2 - Problem Solving	•	•	•	•	•	•
3 - Critical Thinking	•	•	•	•	•	
4 - Information Literacy	•	•	•	•	•	•
5 - Team Work	•	•	•	•	•	•
6 - Information Technology Competence	•	•	•	•	•	•
7 - Cross Cultural Competence	•	•	•	•	•	•
8 - Ethical practice			•	•	•	•

Graduate Attributes	Learning Outcomes					
	1	2	3	4	5	6
9 - Social Innovation						
10 - 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	9	10
1 - Written Assessment - 20%	•	•	•	•		•	•	•		
2 - In-class Test(s) - 40%		•	•	•			•			
3 - Practical and Written Assessment - 40%	•	•	•	•	•	•	•	•		

Textbooks and Resources

Textbooks

ENEC13016

Prescribed

Reinforced concrete basics

Edition: 2nd edn (2010)

Authors: Warner, RR, Foster, SJ & Kilpatrick, AE

Pearson Education

Sydney , NSW , Australia

ISBN: 9781442538450

Binding: Paperback

[View textbooks at the CQUniversity Bookshop](#)

IT Resources

You will need access to the following IT resources:

- CQUniversity Student Email
- Internet
- Unit Website (Moodle)

Referencing Style

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

For further information, see the Assessment Tasks.

Teaching Contacts

Remadevi Dhanasekar Unit Coordinator

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Schedule

Week 1 - 10 Jul 2017

Module/Topic	Chapter	Events and Submissions/Topic
Materials of construction and mix design		

Week 2 - 17 Jul 2017

Module/Topic	Chapter	Events and Submissions/Topic
Theory of Serviceability Behaviour of Reinforced Concrete under Flexure		

Week 3 - 24 Jul 2017

Module/Topic	Chapter	Events and Submissions/Topic
Theory of Serviceability Behaviour of Reinforced Concrete under Flexure		

Week 4 - 31 Jul 2017

Module/Topic	Chapter	Events and Submissions/Topic
Flexural Capacity of RC Beams - Singly & Doubly reinforced rectangular beams and T beams.		

Week 5 - 07 Aug 2017

Module/Topic	Chapter	Events and Submissions/Topic
Flexural Capacity of RC Beams - Singly & Doubly reinforced rectangular beams and T beams.		Assessment item1 - Assignment Due Wednesday (05 Apr 17) 05:00 PM AEST Written Assessment Due: Week 5 Wednesday (9 Aug 2017) 5:00 pm AEST

Vacation Week - 14 Aug 2017

Module/Topic	Chapter	Events and Submissions/Topic

Week 6 - 21 Aug 2017

Module/Topic	Chapter	Events and Submissions/Topic
Analysis and Design of RC Beams for Shear		

Week 7 - 28 Aug 2017

Module/Topic	Chapter	Events and Submissions/Topic
Design of RC Slabs - one way & Two way slabs		

Week 8 - 04 Sep 2017

Module/Topic	Chapter	Events and Submissions/Topic
Design of RC Slabs - one way & Two way slabs		

Week 9 - 11 Sep 2017

Module/Topic	Chapter	Events and Submissions/Topic

Design of RC columns -
Short and slender

Assessment item 2- Class
Test Due Friday (12 May 17)
11:00 AM AEST

In-class Test Due: Week 9 Friday (15
Sept 2017) 5:00 pm AEST

Week 10 - 18 Sep 2017

Module/Topic	Chapter	Events and Submissions/Topic
Design of RC columns - Short and slender		

Week 11 - 25 Sep 2017

Module/Topic	Chapter	Events and Submissions/Topic
Design of Footings		

Week 12 - 02 Oct 2017

Module/Topic	Chapter	Events and Submissions/Topic
Design of Retaining wall		

Review/Exam Week - 09 Oct 2017

Module/Topic	Chapter	Events and Submissions/Topic
		Assessment item 3 - Assignment Due Wednesday (07 Jun 17) 05:00 PM AEST
		Practical and Written Assessment Due: Review/Exam Week Wednesday (11 Oct 2017) 5:00 pm AEST

Exam Week - 16 Oct 2017

Module/Topic	Chapter	Events and Submissions/Topic
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Assessment Tasks

1 Written Assessment

Assessment Type

Written Assessment

Task Description

This assessment has questions from weeks 1 to 3 content and include theory and design questions. Question will be available via the course web site at the beginning of the term.

Assessment Due Date

Week 5 Wednesday (9 Aug 2017) 5:00 pm AEST

Return Date to Students

Grade and feedback will be uploaded on the course web site on or before Week-7, Wednesday.

Weighting

20%

Minimum mark or grade

Minimum mark or grade - Pass - 10 marks which is 50% of the total allotted marks for this assessment item.

Assessment Criteria

Assessment Criteria

(5 %) Presentation and layout—includes the selection of typeface, written and general appearance, detail and quality of the assessment item submission

(95%) Content—includes the accuracy and relevance of information, application of knowledge, language and grammar used in answering questions, and proper referencing of sources of information, equations, images, data and tables used in the assessment submission. When referencing, use of the Harvard Referencing System

Referencing Style

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

Submission

Online

Submission Instructions

Required format is a single word file. Mathematical calculation can be in hand-written format; students should scan the hand-written calculation and insert/paste it within the word file at the appropriate location.

Learning Outcomes Assessed

- Select and specify materials for concrete structures in the context of sustainability and environmental issues and required structural performance
- Determine identify load paths in structural systems for gravity and lateral loading
- Explain the limit state design process and check for ultimate limit state and serviceability limit state requirements in reinforced concrete design
- Design reinforced concrete beams, slabs, columns and retaining walls according to Australian Standard
- Demonstrate a professional level of communication and teamwork

Graduate Attributes

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

2 In-class Test

Assessment Type

In-class Test(s)

Task Description

This assessment cover the content from weeks 4 to 8. Assessment questions include theory and design of structural members . This assessment is of open book format and the duration is 2 hours. Students need to bring their own stationary.

Assessment Due Date

Week 9 Friday (15 Sept 2017) 5:00 pm AEST

Return Date to Students

Grade and feedback will be uploaded on the course web site on or before Week-11, Thursday.

Weighting

40%

Minimum mark or grade

Minimum mark or grade - Pass - 20 marks which is 50% of the total allotted marks for this assessment item.

Assessment Criteria

(100%) Content—includes the accuracy and relevance of information, application of knowledge, language and grammar used in answering questions, and proper referencing of sources of information, equations, images, data and tables used in answering questions.

Referencing Style

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

Submission

Offline

Submission Instructions

In-Class test . Hard copy Use pen or 2B pencil

Learning Outcomes Assessed

- Select and specify materials for concrete structures in the context of sustainability and environmental issues and required structural performance

- Determine identify load paths in structural systems for gravity and lateral loading
- Explain the limit state design process and check for ultimate limit state and serviceability limit state requirements in reinforced concrete design
- Design reinforced concrete beams, slabs, columns and retaining walls according to Australian Standard
- Demonstrate a professional level of communication and teamwork

Graduate Attributes

- Problem Solving
- Critical Thinking
- Information Literacy
- Cross Cultural Competence

3 Practical and Written Assessment

Assessment Type

Practical and Written Assessment

Task Description

This assessment has questions from weeks 9 to 12 content, laboratory and industry visit and include theory and design questions. Assessment questions and Laboratory activities details and report format will be provided to all students on or before week-5

Assessment Due Date

Review/Exam Week Wednesday (11 Oct 2017) 5:00 pm AEST

Return Date to Students

Grade and feedback will be uploaded on the course web site during University vaction period, on or before 01 Nov 2017

Weighting

40%

Minimum mark or grade

Minimum mark or grade - Pass - 20 marks which is 50% of the total allotted marks for this assessment item.

Assessment Criteria

Assessment Criteria

(5 %) Presentation and layout—includes the selection of typeface, written and general appearance, detail and quality of the assessment item submission

(95%) Content—includes the accuracy and relevance of information, application of knowledge, language and grammar used in answering questions, and proper referencing of sources of information, equations, images, data and tables used in the assessment submission. When referencing, use of the Harvard Referencing System

Referencing Style

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

Submission

Online

Submission Instructions

Required format is a single word file. Mathematical calculation can be in hand-written format; Students should scan the hand-written calculation and insert/paste it within the word file at the appropriate location.

Learning Outcomes Assessed

- Select and specify materials for concrete structures in the context of sustainability and environmental issues and required structural performance
- Determine identify load paths in structural systems for gravity and lateral loading
- Explain the limit state design process and check for ultimate limit state and serviceability limit state requirements in reinforced concrete design
- Design reinforced concrete beams, slabs, columns and retaining walls according to Australian Standard
- Plan, test and interpret results of tests on structural materials and prepare test reports
- Demonstrate a professional level of communication and teamwork

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