

## In Progress

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



# ENEC13017 *Advanced Structural Analysis*

## Term 2 - 2022

Profile information current as at 18/05/2022 06:46 am

All details in this unit profile for ENEC13017 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

You will learn analysis of indeterminate structures and the implications this has for structural analysis. You will also determine reactions, internal forces, and displacements of structures and analyse truss and beams with moving loads. You will be introduced to the fundamentals of the structural analysis using the matrix method and you will use commercially available software to analyse structures.

### 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: ENEG11006 Engineering Statics and ENEC12012 Stress Analysis

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

- Bundaberg
- Cairns
- Gladstone
- Mackay
- Online
- 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).

### 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

#### 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 Have Your Say Survey

**Feedback**

The number of tutorials, additional video training and example workings were great.

**Recommendation**

This practice will continue.

#### Feedback from Have Your Say Survey

**Feedback**

There were too many assessments for a 6pc unit.

**Recommendation**

The number of assessments will be reduced. More feedback will be provided to students to increase the students satisfaction with the assessment feedback.

#### Feedback from Have Your Say Survey

**Feedback**

The concepts are very interesting and the way the unit is broken up into blocks is logical.

**Recommendation**

This practice will continue.

## Unit Learning Outcomes

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

1. Conduct structural idealisation of practical structures
2. Analyse statically indeterminate structures to determine support reactions, internal forces, and nodal displacements
3. Solve structural analysis problems using software packages
4. Analyse indeterminate structure using the direct stiffness method
5. Demonstrate a professional level of communication.

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** 2.4 Application of systematic approaches to the conduct and management of engineering projects. (LO: 3N 4N ) 3.4 Professional use and management of information. (LO: 4N ) 3.5 Orderly management of self, and professional conduct. (LO: 3N 4N )

### Intermediate

1.3 In-depth understanding of specialist bodies of knowledge within the engineering discipline. (LO: 2N 3I 4I ) 1.4 Discernment of knowledge development and research directions within the engineering discipline. (LO: 3N 4I ) 2.3 Application of systematic engineering synthesis and design processes. (LO: 1N 2I ) 3.2 Effective oral and written communication in professional and lay domains. (LO: 5I )

### Advanced

1.1 Comprehensive, theory-based understanding of the underpinning natural and physical sciences and the engineering fundamentals applicable to the engineering discipline. (LO: 1I 2I 3I 4A ) 1.2 Conceptual understanding of the mathematics, numerical analysis, statistics, and computer and information sciences which underpin the engineering discipline. (LO: 2I 4A ) 1.5 Knowledge of engineering design practice and contextual factors impacting the engineering discipline. (LO: 1N 2I 3I 4A ) 2.1 Application of established engineering methods to complex engineering problem solving. (LO: 1N 2I 3A 4A ) 2.2 Fluent application of engineering techniques, tools, and resources. (LO: 3A 4A )

**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 Undergraduate Course 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=1511>

## Alignment of Learning Outcomes, Assessment and Graduate Attributes



### Alignment of Assessment Tasks to Learning Outcomes

Assessment Tasks	Learning Outcomes				
	1	2	3	4	5
1 - Online Quiz(zes) - 20%	•	•			
2 - Written Assessment - 20%	•	•	•		•
3 - Written Assessment - 20%		•	•		•

Assessment Tasks	Learning Outcomes				
	1	2	3	4	5
4 - Online Test - 40%		•		•	

### Alignment of Graduate Attributes to Learning Outcomes

Graduate Attributes	Learning Outcomes				
	1	2	3	4	5
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					•
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 - Online Quiz(zes) - 20%	•	•	•	•						
2 - Written Assessment - 20%	•	•	•	•						
3 - Written Assessment - 20%	•	•	•	•						
4 - Online Test - 40%	•	•	•	•						

## Textbooks and Resources

### Textbooks

ENEC13017

#### **Prescribed**

#### **Structural Analysis in SI Units**

Edition: 10th edn (2019)

Authors: Hibbeler, R

Pearson

Harlow , Essex , UK

ISBN: 9781292247137

Binding: Paperback

[View textbooks at the CQUniversity Bookshop](#)

### IT Resources

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

## Academic Integrity Statement

Information for Academic Integrity Statement has not been released yet.

This unit profile has not yet been finalised.