



# BLAR12054 *Structural Design Processes*

## Term 1 - 2023

Profile information current as at 30/04/2024 12:33 am

All details in this unit profile for BLAR12054 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 develops an understanding of: structural drawings and computational methods associated with timber, reinforced concrete and steel structures; design processes for timber structures including: beams, columns, tension members, compression members and connections; design processes for reinforced concrete structures including; approximate analysis and sizing of members; singly reinforced beams; doubly reinforced beams; T beams; L beams; One-way slabs; Two-way slabs; columns-short and long; footings; design process for steel structures including approximate sizing of beams and columns, tension members, compressing members, beams, columns-short and long, stiffeners and connections.

#### Details

Career Level: *Undergraduate*

Unit Level: *Level 2*

Credit Points: 6

Student Contribution Band: 8

Fraction of Full-Time Student Load: 0.125

#### Pre-requisites or Co-requisites

Prerequisites - BLAR11032

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 - 2023

- Online

#### 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

#### 1. **Written Assessment**

Weighting: 30%

#### 2. **Written Assessment**

Weighting: 30%

#### 3. **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](#).

## 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 Unit evaluation via Moodle

##### Feedback

Very well set out and delivered. Great use of resources. The unit was well formatted with a clear and logical progression. Lecturer was good and provided a good understanding of the unit content.

##### Recommendation

Good to know the content and resources were useful towards learning progress and knowledge development.

#### Feedback from Unit evaluation via Moodle

##### Feedback

I struggled with maths and one-to-one Zoom session helped. At the end understood the content well, maybe it is my own confidence issues.

##### Recommendation

Thanks for the feedback. Nice to see Lecturer helped the student/s to his level best.

## Unit Learning Outcomes

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

1. Describe structural analysis processes.
2. Analyse statically indeterminate structures by both rigorous and approximate methods.
3. Perform preliminary designs for structures and also sizing and design of simple structural members in buildings
4. Use effectively a range of appropriate communication modes.

## Alignment of Learning Outcomes, Assessment and Graduate Attributes



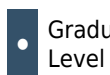
N/A  
Level



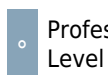
Introductory  
Level



Intermediate  
Level



Graduate  
Level



Professional  
Level



Advanced  
Level

### Alignment of Assessment Tasks to Learning Outcomes

Assessment Tasks	Learning Outcomes			
	1	2	3	4
1 - Written Assessment - 30%	•	•	•	•
2 - Written Assessment - 30%	•		•	•
3 - Written Assessment - 40%			•	•

### Alignment of Graduate Attributes to Learning Outcomes

Graduate Attributes	Learning Outcomes			
	1	2	3	4
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 - Written Assessment - 30%	•	•	•	•		•		•		
2 - Written Assessment - 30%	•	•	•	•		•		•		
3 - Written Assessment - 40%	•	•	•	•		•		•		

## Textbooks and Resources

### Textbooks

BLAR12054

#### Prescribed

##### Understanding Structures

Edition: 5th (2014)

Authors: Seward, D

Palgrave Macmillan

Basingstoke, Hampshire, UK

ISBN: 1137376562

Binding: Paperback

#### Additional Textbook Information

The prescribed textbook can be accessed online at the CQUniversity Library website. Access may be limited.

If you would prefer your own copy, purchase either paper or eBook versions at the CQUni Bookshop here:

<http://bookshop.cqu.edu.au> (search on the Unit code)

[View textbooks at the CQUniversity Bookshop](#)

### IT Resources

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

- CQUniversity Student Email
- Internet
- Unit Website (Moodle)
- Access to printer and scanner
- Computer headset (microphone speaker combo)
- MS Office or equivalent software
- Web camera (webcam)

## Referencing Style

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

For further information, see the Assessment Tasks.

## Teaching Contacts

**Peter F Lawrence (Engineering)** Unit Coordinator

[p.lawrence1@cqu.edu.au](mailto:p.lawrence1@cqu.edu.au)

## Schedule

### Week 1 - 06 Mar 2023

Module/Topic	Chapter	Events and Submissions/Topic
Structural analysis processes: an overview of the design of multi cell buildings	Please refer to the Moodle unit site for additional information.	

### Week 2 - 13 Mar 2023

Module/Topic	Chapter	Events and Submissions/Topic
The analysis of indeterminate structures	Please refer to the Moodle unit site for additional information.	

**Week 3 - 20 Mar 2023**

Module/Topic	Chapter	Events and Submissions/Topic
Combined stress analysis and limit state philosophies Design of timber structures (start)	Please refer to the Moodle unit site for additional information.	

**Week 4 - 27 Mar 2023**

Module/Topic	Chapter	Events and Submissions/Topic
Design of timber structures (continued)	Please refer to the Moodle unit site for additional information.	

**Week 5 - 03 Apr 2023**

Module/Topic	Chapter	Events and Submissions/Topic
Design of timber structures (finish) Design of concrete structures (start)	Please refer to the Moodle unit site for additional information.	<b>Assessment 1</b> Due: Week 5 Wednesday (5 Apr 2023) 11:45 pm AEST

**Vacation Week - 10 Apr 2023**

Module/Topic	Chapter	Events and Submissions/Topic
No scheduled class	Consider using this week to work on an assessment or take a wellness break.	

**Week 6 - 17 Apr 2023**

Module/Topic	Chapter	Events and Submissions/Topic
Design of concrete structures (continued)	Please refer to the Moodle unit site for additional information.	

**Week 7 - 24 Apr 2023**

Module/Topic	Chapter	Events and Submissions/Topic
Design of concrete structures (continued)	Please refer to the Moodle unit site for additional information.	

**Week 8 - 01 May 2023**

Module/Topic	Chapter	Events and Submissions/Topic
Design of concrete structures (finish)	Please refer to the Moodle unit site for additional information.	<b>Assessment 2</b> Due: Week 8 Wednesday (3 May 2023) 11:45 pm AEST

**Week 9 - 08 May 2023**

Module/Topic	Chapter	Events and Submissions/Topic
Design of steel structures (start)	Please refer to the Moodle unit site for additional information.	

**Week 10 - 15 May 2023**

Module/Topic	Chapter	Events and Submissions/Topic
Design of steel structures (continued)	Please refer to the Moodle unit site for additional information.	

**Week 11 - 22 May 2023**

Module/Topic	Chapter	Events and Submissions/Topic
Design of steel structures (finish)	Please refer to the Moodle unit site for additional information.	

**Week 12 - 29 May 2023**

Module/Topic	Chapter	Events and Submissions/Topic
Professional practice: the future	Please refer to the Moodle unit site for additional information.	

**Review/Exam Week - 05 Jun 2023**

Module/Topic	Chapter	Events and Submissions/Topic
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No class

**Assessment 3** Due: Review/Exam  
Week Wednesday (7 June 2023) 11:45  
pm AEST

### Exam Week - 12 Jun 2023

Module/Topic

Chapter

Events and Submissions/Topic

No exam for this unit.

## Assessment Tasks

### 1 Assessment 1

#### Assessment Type

Written Assessment

#### Task Description

This assessment aligns to learning outcomes 1 to 4. Assessment 1 requires you to research and answer questions exploring the theory and analysis of common building structures.

#### Assessment Due Date

Week 5 Wednesday (5 Apr 2023) 11:45 pm AEST

#### Return Date to Students

Week 7 Wednesday (26 Apr 2023)

#### Weighting

30%

#### Assessment Criteria

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

(90%) 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.

(5%) Referencing - demonstrating compliance with the CQU Harvard Referencing Guide.

#### Referencing Style

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

#### Submission

Online

#### Submission Instructions

Submit as a single PDF or DOCX file. Legible hand-written calculations as a PDF file are accepted.

#### Learning Outcomes Assessed

- Describe structural analysis processes.
- Analyse statically indeterminate structures by both rigorous and approximate methods.
- Perform preliminary designs for structures and also sizing and design of simple structural members in buildings
- Use effectively a range of appropriate communication modes.

#### Graduate Attributes

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

### 2 Assessment 2

#### Assessment Type

Written Assessment

**Task Description**

This assessment aligns to learning outcomes 1,3 and 4. Assessment 2 requires you to research and answer questions exploring the theory and design of structural elements.

**Assessment Due Date**

Week 8 Wednesday (3 May 2023) 11:45 pm AEST

**Return Date to Students**

Week 10 Wednesday (17 May 2023)

**Weighting**

30%

**Minimum mark or grade**

12/30 (40%)

**Assessment Criteria**

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

(90%) 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.

(5%) Referencing - demonstrating compliance with the CQU Harvard Referencing Guide.

**Referencing Style**

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

**Submission**

Online

**Submission Instructions**

Submit as a single PDF or DOCX file. Legible hand-written calculations as a PDF file are accepted.

**Learning Outcomes Assessed**

- Describe structural analysis processes.
- Perform preliminary designs for structures and also sizing and design of simple structural members in buildings
- Use effectively a range of appropriate communication modes.

**Graduate Attributes**

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

### 3 Assessment 3

**Assessment Type**

Written Assessment

**Task Description**

This assessment aligns to learning outcomes 3 and 4. Assessment 3 requires you to research and answer questions exploring the theory and design of structural members.

**Assessment Due Date**

Review/Exam Week Wednesday (7 June 2023) 11:45 pm AEST

**Return Date to Students**

Friday 30/06/23

**Weighting**

40%

**Minimum mark or grade**

16/40 (40%)



**Assessment Criteria**

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

(90%) 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.

(5%) Referencing - demonstrating compliance with the CQU Harvard Referencing Guide.

**Referencing Style**

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

**Submission**

Online

**Submission Instructions**

Submit as a single PDF or DOCX file. Legible hand-written calculations as a PDF file are accepted.

**Learning Outcomes Assessed**

- Perform preliminary designs for structures and also sizing and design of simple structural members in buildings
- Use effectively a range of appropriate communication modes.

**Graduate Attributes**

- Communication
- Problem Solving
- Critical Thinking
- Information Literacy
- Information Technology 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