BLAR11032 *Structural Forms & Analysis*
Term 1 - 2017

Profile information current as at 08/05/2024 06:06 am

All details in this unit profile for BLAR11032 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 will introduce you to basic systems and calculations in structural design and stability for residential and commercial buildings.

Details
Career Level: *Undergraduate*
Unit Level: *Level 1*
Credit Points: *6*
Student Contribution Band: *8*
Fraction of Full-Time Student Load: *0.125*

Pre-requisites or Co-requisites
BLAR11049 Built Environment Communication and Skills Or COMM11003 Professional and Technical Communication (before 2012 term 1)
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 - 2017

- Distance

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: 5%
2. **Written Assessment**
Weighting: 20%
3. **Written Assessment**
Weighting: 5%
4. **Written Assessment**
Weighting: 30%
5. **Written Assessment**
Weighting: 5%
6. **Written Assessment**
Weighting: 35%

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 Student feedback

Feedback
Short response assessments

Recommendation
Short response questions will receive general feedback only. Students may contact the lecturer if they cannot see how to improve.

Action
Implemented - no major issues.

Unit Learning Outcomes

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

1. Explain the concept of equilibrium, determine loading and load paths in building structures and calculate supporting reactions.
2. Calculate the properties of sections including first and second moment of area, structural determinancy and indeterminancy, bending and shear forces, bending moments, shear and bending stresses, deflections in beams, axial forces in trusses and column stresses, capacity and buckling.
3. Apply the principles of structural analysis to determinate and indeterminate structures including the design of beams and columns and the bracing of rigid and pin jointed frames.
4. Use basic computational methods to solve structural problems associated with residential and commercial buildings.

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 - 5%	●	●		
2 - Written Assessment - 20%	●	●		●
3 - Written Assessment - 5%	●		●	
4 - Written Assessment - 30%	●	●	●	●
5 - Written Assessment - 5%	●		●	
6 - Written Assessment - 35%	●	●	●	●

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 - 5%		•	•	•		•		•		
2 - Written Assessment - 20%		•	•	•		•		•		
3 - Written Assessment - 5%		•	•	•		•		•		
4 - Written Assessment - 30%	•	•	•	•		•		•		
5 - Written Assessment - 5%	•	•	•	•		•		•		
6 - Written Assessment - 35%	•	•	•	•		•		•		

Textbooks and Resources

Textbooks
BLAR11032

Prescribed

Principles Of Structure
Edition: 5e (2013)
Authors: Wyatt, KJ & Hough, R
Newsouth Books
Sydney , NSW , Australia
Binding: Hardcover

View textbooks at the CQUniversity Bookshop

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

- CQUniversity Student Email
- Internet
- Unit Website (Moodle)
- Computer headset (microphone speaker combo)
- Microsoft 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

Phillip Harrison Unit Coordinator
p.harrison@cqu.edu.au

Schedule

Week 1 - 06 Mar 2017

Module/Topic	Chapter	Events and Submissions/Topic
1:Equilibrium and building structures	Wyatt & Hough (2013) chapter 1, 4	

Week 2 - 13 Mar 2017

Module/Topic	Chapter	Events and Submissions/Topic
2:Load and load paths, support conditions	Wyatt & Hough (2013) chapter 1, 3	**Assessment 1 - Short Written Response** Due: Week 2 Friday (17 Mar 2017) 11:45 pm AEST

Week 3 - 20 Mar 2017

Module/Topic	Chapter	Events and Submissions/Topic
3:Determinacy, indeterminacy and instability	Wyatt & Hough (2013) chapter 1	

Week 4 - 27 Mar 2017

Module/Topic	Chapter	Events and Submissions/Topic

| 4:Section properties | Wyatt & Hough (2013) chapter 1, 2, 8 | **Assessment 2 - Written Assessment** Due: Week 4 Friday (31 Mar 2017) 11:45 pm AEST |

Week 5 - 03 Apr 2017

Module/Topic	Chapter	Events and Submissions/Topic
5:Analysis of statically determinate trusses	Wyatt & Hough (2013) chapter 2, 5	

Vacation Week - 10 Apr 2017

Module/Topic	Chapter	Events and Submissions/Topic

Week 6 - 17 Apr 2017

Module/Topic	Chapter	Events and Submissions/Topic
6:Beams shear force and bending moment	Wyatt & Hough (2013) chapter 7	**Assessment 3 - Short Written Response** Due: Week 6 Friday (21 Apr 2017) 11:45 pm AEST

Week 7 - 24 Apr 2017

Module/Topic	Chapter	Events and Submissions/Topic
7.Bending and shear stresses	Wyatt & Hough (2013) chapter 9, 10	

Week 8 - 01 May 2017

Module/Topic	Chapter	Events and Submissions/Topic
8:Compression and tension stresses	Wyatt & Hough (2013) chapter 2	**Assessment 4 - Written Assessment** Due: Week 8 Friday (5 May 2017) 11:45 am AEST

Week 9 - 08 May 2017

Module/Topic	Chapter	Events and Submissions/Topic
9:Deflections	Wyatt & Hough (2013) chapter 11	

Week 10 - 15 May 2017

Module/Topic	Chapter	Events and Submissions/Topic
10:Design of beams	Wyatt & Hough (2013) chapter 12	**Assessment 5 - Short Written Response** Due: Week 10 Friday (19 May 2017) 11:45 pm AEST

Week 11 - 22 May 2017

Module/Topic	Chapter	Events and Submissions/Topic
11:Bracing of buildings	Wyatt & Hough (2013) chapter 6	

Week 12 - 29 May 2017

Module/Topic	Chapter	Events and Submissions/Topic
12:Computer applications in structural analysis and Design	Refer to the course topic	

Review/Exam Week - 05 Jun 2017

Module/Topic	Chapter	Events and Submissions/Topic
Review		**Assessment 6 - Written Assessment** Due: Review/Exam Week Friday (9 June 2017) 11:45 pm AEST

Exam Week - 12 Jun 2017

Module/Topic	Chapter	Events and Submissions/Topic

Assessment Tasks

1 Assessment 1 - Short Written Response

Assessment Type
Written Assessment

Task Description
This assessment relates to course learning outcomes 1 and 2. Assessment A1 will require you to research and answer a question that explores common structural engineering concepts.

Assessment Due Date
Week 2 Friday (17 Mar 2017) 11:45 pm AEST

Return Date to Students
Week 4 Friday (31 Mar 2017)

Weighting
5%

Minimum mark or grade
Aggregate mark for A1+A3+A5 to be 7.5/15 or higher

Assessment Criteria
This assessment relates to course learning outcomes 1 and 2. Assessment 1 will require you to research and answer a question that explores common structural engineering concepts.
As with all assessments, formatting and presentation is really important, technical accuracy and referencing where required is paramount with an overarching requirement for demonstrating your answer / submission / design with clarity.
Your assessment should be produced in electronic format either as

- a single word-processed document, or
- a single pdf format document.

All submissions should be submitted through the assessment link in Moodle, by uploading your file following the on-screen instructions.
Note: that all submissions are processed through the similarity detection software (called Turnitin)
You must ensure that all of the work is your own, in line with University requirements.
Note: you will find further support material for this assessment on the Moodle site for this course.
The assessment will be assessed on the following basis:
Clarity of expression and comprehensive coverage of issues
Use of quality supporting documentation as appropriate
Use of original thought and content
Overall presentation and ability to communicate using correct spelling, grammar and punctuation and the use of appropriate diagrams and other visual communication.
Demonstration of core knowledge and demonstration of appropriate application of knowledge.

Referencing Style

- Harvard (author-date)

Submission
Online

Learning Outcomes Assessed

- Explain the concept of equilibrium, determine loading and load paths in building structures and calculate supporting reactions.
- Calculate the properties of sections including first and second moment of area, structural determinancy and indeterminancy, bending and shear forces, bending moments, shear and bending stresses, deflections in beams, axial forces in trusses and column stresses, capacity and buckling.

Graduate Attributes

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

2 Assessment 2 - Written Assessment

Assessment Type
Written Assessment

Task Description
This assessment relates to course learning outcomes 1 and 2. Assessment 2 will require you to research and answer a number of questions that explore common structural engineering concepts.

Assessment Due Date
Week 4 Friday (31 Mar 2017) 11:45 pm AEST

Return Date to Students
Week 6 Friday (21 Apr 2017)

Weighting
20%

Assessment Criteria
This assessment relates to course learning outcomes 1 and 2. Assessment 2 will require you to research and answer a number of questions that explore common structural engineering concepts.
As with all assessments, formatting and presentation is really important, technical accuracy and referencing where required is paramount with an overarching requirement for demonstrating your answer / submission / design with clarity.
Your assessment should be produced in electronic format either as

- a single word-processed document, or
- a single pdf format document.

All submissions should be submitted through the assessment link in Moodle, by uploading your file following the on-screen instructions.
Note: that all submissions are processed through the similarity detection software (called Turnitin)
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Note: you will find further support material for this assessment on the Moodle site for this course.
The assessment will be assessed on the following basis:
Clarity of expression and comprehensive coverage of issues
Use of quality supporting documentation as appropriate
Use of original thought and content
Overall presentation and ability to communicate using correct spelling, grammar and punctuation and the use of appropriate diagrams and other visual communication.
Demonstration of core knowledge and demonstration of appropriate application of knowledge.

Referencing Style

- Harvard (author-date)

Submission
Online

Learning Outcomes Assessed

- Explain the concept of equilibrium, determine loading and load paths in building structures and calculate supporting reactions.
- Calculate the properties of sections including first and second moment of area, structural determinancy and indeterminancy, bending and shear forces, bending moments, shear and bending stresses, deflections in beams, axial forces in trusses and column stresses, capacity and buckling.
- Use basic computational methods to solve structural problems associated with residential and commercial buildings.

Graduate Attributes

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

3 Assessment 3 - Short Written Response

Assessment Type
Written Assessment

Task Description
This assessment relates to course learning outcomes 1 and 3. Assessment 3 will require you to research and answer a question that explores common structural engineering concepts.

Assessment Due Date
Week 6 Friday (21 Apr 2017) 11:45 pm AEST

Return Date to Students
Week 8 Friday (5 May 2017)

Weighting
5%

Minimum mark or grade
Aggregate mark for A1+A3+A5 to be 7.5/15 or higher

Assessment Criteria
This assessment relates to course learning outcomes 1 and 3. Assessment 3 will require you to research and answer a question that explores common structural engineering concepts.
As with all assessments, formatting and presentation is really important, technical accuracy and referencing where required is paramount with an overarching requirement for demonstrating your answer / submission / design with clarity.
Your assessment should be produced in electronic format either as

- a single word-processed document, or
- a single pdf format document.

All submissions should be submitted through the assessment link in Moodle, by uploading your file following the on-screen instructions.
Note: that all submissions are processed through the similarity detection software (called Turnitin)
You must ensure that all of the work is your own, in line with University requirements.
Note: you will find further support material for this assessment on the Moodle site for this course.
The assessment will be assessed on the following basis:
Clarity of expression and comprehensive coverage of issues
Use of quality supporting documentation as appropriate
Use of original thought and content
Overall presentation and ability to communicate using correct spelling, grammar and punctuation and the use of appropriate diagrams and other visual communication.
Demonstration of core knowledge and demonstration of appropriate application of knowledge.

Referencing Style

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

Submission
Online

Learning Outcomes Assessed

- Explain the concept of equilibrium, determine loading and load paths in building structures and calculate supporting reactions.
- Apply the principles of structural analysis to determinate and indeterminate structures including the design of beams and columns and the bracing of rigid and pin jointed frames.

Graduate Attributes

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

4 Assessment 4 - Written Assessment

Assessment Type
Written Assessment

Task Description
This assessment relates to course learning outcomes 1 to 4. Assessment 4 will require you to research and answer a number of questions that explore common structural engineering concepts.

Assessment Due Date
Week 8 Friday (5 May 2017) 11:45 am AEST

Return Date to Students
Week 10 Friday (19 May 2017)

Weighting
30%

Assessment Criteria
This assessment relates to course learning outcomes 1 to 4. Assessment 4 will require you to research and answer a number of questions that explore common structural engineering concepts.
As with all assessments, formatting and presentation is really important, technical accuracy and referencing where required is paramount with an overarching requirement for demonstrating your answer / submission / design with clarity.
Your assessment should be produced in electronic format either as

- a single word-processed document, or
- a single pdf format document.

All submissions should be submitted through the assessment link in Moodle, by uploading your file following the on-screen instructions.
Note: that all submissions are processed through the similarity detection software (called Turnitin)
You must ensure that all of the work is your own, in line with University requirements.
Note: you will find further support material for this assessment on the Moodle site for this course.
The assessment will be assessed on the following basis:
Clarity of expression and comprehensive coverage of issues
Use of quality supporting documentation as appropriate
Use of original thought and content
Overall presentation and ability to communicate using correct spelling, grammar and punctuation and the use of appropriate diagrams and other visual communication.
Demonstration of core knowledge and demonstration of appropriate application of knowledge.

Referencing Style

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

Submission
Online

Learning Outcomes Assessed

- Explain the concept of equilibrium, determine loading and load paths in building structures and calculate supporting reactions.
- Calculate the properties of sections including first and second moment of area, structural determinancy and indeterminancy, bending and shear forces, bending moments, shear and bending stresses, deflections in beams, axial forces in trusses and column stresses, capacity and buckling.
- Apply the principles of structural analysis to determinate and indeterminate structures including the design of beams and columns and the bracing of rigid and pin jointed frames.
- Use basic computational methods to solve structural problems associated with residential and commercial buildings.

Graduate Attributes

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

5 Assessment 5 - Short Written Response

Assessment Type
Written Assessment

Task Description
This assessment relates to course learning outcomes 1 and 3. Assessment 5 will require you to research and answer a question that explores common structural engineering concepts.

Assessment Due Date
Week 10 Friday (19 May 2017) 11:45 pm AEST

Return Date to Students
Week 12 Friday (2 June 2017)

Weighting
5%

Minimum mark or grade
Aggregate mark for A1+A3+A5 to be 7.5/15 or higher

Assessment Criteria
This assessment relates to course learning outcomes 1 and 3. Assessment 5 will require you to research and answer a question that explores common structural engineering concepts.
As with all assessments, formatting and presentation is really important, technical accuracy and referencing where required is paramount with an overarching requirement for demonstrating your answer / submission / design with clarity. Your assessment should be produced in electronic format either as

- a single word-processed document, or
- a single pdf format document.

All submissions should be submitted through the assessment link in Moodle, by uploading your file following the on-screen instructions.
Note: that all submissions are processed through the similarity detection software (called Turnitin)
You must ensure that all of the work is your own, in line with University requirements.
Note: you will find further support material for this assessment on the Moodle site for this course.
The assessment will be assessed on the following basis:
Clarity of expression and comprehensive coverage of issues
Use of quality supporting documentation as appropriate
Use of original thought and content
Overall presentation and ability to communicate using correct spelling, grammar and punctuation and the use of appropriate diagrams and other visual communication.
Demonstration of core knowledge and demonstration of appropriate application of knowledge.

Referencing Style

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

Submission
Online

Learning Outcomes Assessed

- Explain the concept of equilibrium, determine loading and load paths in building structures and calculate supporting reactions.
- Apply the principles of structural analysis to determinate and indeterminate structures including the design of beams and columns and the bracing of rigid and pin jointed frames.

Graduate Attributes

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

6 Assessment 6 - Written Assessment

Assessment Type
Written Assessment

Task Description
This assessment relates to course learning outcomes 1 to 4. Assessment 6 will require you to research and answer a number of questions that explore common structural engineering concepts.

Assessment Due Date
Review/Exam Week Friday (9 June 2017) 11:45 pm AEST

Return Date to Students

Returned Friday 30th June

Weighting
35%

Minimum mark or grade
14/35

Assessment Criteria
This assessment relates to course learning outcomes 1 to 4. Assessment 6 will require you to research and answer a number of questions that explore common structural engineering concepts.
As with all assessments, formatting and presentation is really important, technical accuracy and referencing where required is paramount with an overarching requirement for demonstrating your answer / submission / design with clarity. Your assessment should be produced in electronic format either as

- a single word-processed document, or
- a single pdf format document.

All submissions should be submitted through the assessment link in Moodle, by uploading your file following the on-screen instructions.
Note: that all submissions are processed through the similarity detection software (called Turnitin)
You must ensure that all of the work is your own, in line with University requirements.
Note: you will find further support material for this assessment on the Moodle site for this course.
The assessment will be assessed on the following basis:
Clarity of expression and comprehensive coverage of issues
Use of quality supporting documentation as appropriate
Use of original thought and content
Overall presentation and ability to communicate using correct spelling, grammar and punctuation and the use of appropriate diagrams and other visual communication.
Demonstration of core knowledge and demonstration of appropriate application of knowledge.

Referencing Style

- Harvard (author-date)

Submission
Online

Learning Outcomes Assessed

- Explain the concept of equilibrium, determine loading and load paths in building structures and calculate supporting reactions.
- Calculate the properties of sections including first and second moment of area, structural determinancy and indeterminancy, bending and shear forces, bending moments, shear and bending stresses, deflections in beams, axial forces in trusses and column stresses, capacity and buckling.
- Apply the principles of structural analysis to determinate and indeterminate structures including the design of beams and columns and the bracing of rigid and pin jointed frames.
- Use basic computational methods to solve structural problems associated with residential and commercial buildings.

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