



ENEG11006 Engineering Statics

Term 1 - 2017

Profile information current as at 17/05/2022 02:43 pm

All details in this unit profile for ENEG11006 have been officially approved by CQUUniversity 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

Understanding forces applied to structural elements and static equilibrium concepts is essential for analysis of statically determinate engineering structures including beams, trusses and frames. You will analyse such structures under external forces to create Free-body diagrams, calculate support reactions and determine internal forces acting on the structures. You will be drawing diagrams of Shear Force and Bending Moments after calculating the internal forces.

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

There are no requisites for this unit.

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

- Bundaberg
- Cairns
- 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).

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. **Online Quiz(zes)**

Weighting: 20%

2. **Written Assessment**

Weighting: 20%

3. **Written Assessment**

Weighting: 20%

4. **Examination**

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 Course Evaluation

Feedback

Textbook is complex.

Recommendation

The textbook is one of the best available on the market. How to use the textbook will be better communicated with students in the first week.

Action

Online study schedule was published with references to the textbook.

Feedback from Course Evaluation

Feedback

Assignment problems were more complex than examples in the lectures.

Recommendation

It is generally expected that assignment items are slightly complex than the lectures. However, attempt will be made to solve problems of mixed complexities during the lecture.

Action

The assignment expectations were communicated more regularly in the class. Different levels of problems were introduced in the tutorials.

Unit Learning Outcomes

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

1. Analyse two dimensional force systems to determine resultant forces
2. Calculate sectional properties such as centre of gravity, centroid and second moment of Inertia of simple structural forms
3. Apply static equilibrium concepts to bodies with external forces and moments, create Free-body diagrams and determine support reactions
4. Analyse statically determinate structures, including beams, frames and trusses, to calculate internal forces and create Shear-force and Bending-moment diagrams.
5. Demonstrate a professional level of communication skills in written work

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
1 - Online Quiz(zes) - 20%	•	•	•	•	

Assessment Tasks	Learning Outcomes				
	1	2	3	4	5
2 - Written Assessment - 20%	•	•	•	•	•
3 - Written Assessment - 20%	•	•	•	•	•
4 - Examination - 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 - Examination - 40%	•	•	•					•		

Textbooks and Resources

Textbooks

ENEG11006

Prescribed

Engineering Mechanics: STATICS

14th Edition in SI Units (2017)

Authors: R. C. Hibbeler

Pearson

Essex , England

Binding: Paperback

Additional Textbook Information

This text comes value packed with the Study Pack (includes chapter reviews) and Modified MasteringEngineering, at a reduced cost to students. Copies can be purchased at the CQUni Bookshop here: <http://bookshop.cqu.edu.au>

[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

Raj Sharma Unit Coordinator

r.sharma@cqu.edu.au

Schedule

Week 1 - 06 Mar 2017

Module/Topic	Chapter	Events and Submissions/Topic
Review of Fundamentals	Chapter 1 General Principles Chapter 2 Force Vectors	

Week 2 - 13 Mar 2017

Module/Topic	Chapter	Events and Submissions/Topic
Equilibrium of a Particle and Force System Resultants	Chapter 3 Equilibrium of a Particle Chapter 4 Force System Resultants	

Week 3 - 20 Mar 2017

Module/Topic	Chapter	Events and Submissions/Topic
Equilibrium of a Rigid Body	Chapter 5 Equilibrium of a Rigid Body	Test 1: Covers Contents from Week 1 and 2 The Test opens on 9:00 AM Monday and closes on 9:00 AM Friday of Week 3.

Week 4 - 27 Mar 2017

Module/Topic	Chapter	Events and Submissions/Topic
Analysis of Trusses: Method of Joints	Chapter 6 Structural Analysis	

Week 5 - 03 Apr 2017

Module/Topic	Chapter	Events and Submissions/Topic
Analysis of Trusses: Method of Sections	Chapter 6 Structural Analysis	Test 2: Covers Contents from Week 3 and 4 The Test opens on 9:00 AM Monday and closes on 9:00 AM Friday of Week 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
Internal Forces: Calculation of Axial Force, Shear Force and Bending Moment- Simple System	Chapter 7 Internal Forces	Assignment 1 Due: Week 6 Tuesday (18 Apr 2017) 11:45 pm AEST

Week 7 - 24 Apr 2017

Module/Topic	Chapter	Events and Submissions/Topic
Internal Forces: Calculation of Axial Force, Shear Force and Bending Moment-Complex system	Chapter 7 Internal Forces	

Week 8 - 01 May 2017

Module/Topic	Chapter	Events and Submissions/Topic
Internal Forces: Axial Force, Shear Force and Bending Moment Diagrams	Chapter 7 Internal Forces	Test 3: Covers Contents from Week 6 and 7 The Test opens on 9:00 AM Monday and closes on 9:00 AM Friday of Week 8.

Week 9 - 08 May 2017

Module/Topic	Chapter	Events and Submissions/Topic
Friction	Chapter 8 Friction	

Week 10 - 15 May 2017

Module/Topic	Chapter	Events and Submissions/Topic
Center of Gravity and Centroid Moment of Inertia	Chapter 9 Center of Gravity and Centroid Chapter 10 Moments of Inertia	Assignment 2 Due: Week 10 Tuesday (16 May 2017) 11:45 pm AEST

Week 11 - 22 May 2017

Module/Topic	Chapter	Events and Submissions/Topic
Revision Week I		Test 4: Covers Contents from Week 9 and 10 The Test opens on 9:00 AM Monday and closes on 9:00 AM Friday of Week 11.

Week 12 - 29 May 2017

Module/Topic	Chapter	Events and Submissions/Topic
Revision Week II		

Review/Exam Week - 05 Jun 2017

Module/Topic	Chapter	Events and Submissions/Topic

Assessment Tasks

1 Progressive Tests

Assessment Type

Online Quiz(zes)

Task Description

This assessment task consists of four "Progressive Tests", each weighs 5% of your final mark. Each Test consists of 5-10 Numerical questions.

Important Notes:

- Each Test is set for 60 minutes. You have 60 minutes from when you start your attempt to submit your answers.
- If you start but leave a test and come back to it later, your 60 min time may have lapsed and you will be scored zero for that attempt.
- You can attempt the Test up to **THREE times** within the given time frame as specified in the Schedule. The test will be automatically closed after the end of the given time frame.
- Final mark will be the highest of all the attempts.
- Even though the tests are open for a few days, it is expected that your first attempt would be on the first day.
- The Tests cannot generally be deferred. However, under exceptional circumstances if you have valid reasons to defer the test(s), please contact the Unit Coordinator with documents of proof before the due date. The proof should cover for all the dates that the test/s is/are open.

Number of Quizzes

4

Frequency of Quizzes

Other

Assessment Due Date

Tests opening and closing details are given on the schedule section.

Return Date to Students

Immediately after the test.

Weighting

20%

Minimum mark or grade

50% from the Tests.

Assessment Criteria

Full marks allocated to a question will be awarded for each correct answer.

Referencing Style

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

Submission

Online

Learning Outcomes Assessed

- Analyse two dimensional force systems to determine resultant forces
- Calculate sectional properties such as centre of gravity, centroid and second moment of Inertia of simple structural forms
- Apply static equilibrium concepts to bodies with external forces and moments, create Free-body diagrams and determine support reactions
- Analyse statically determinate structures, including beams, frames and trusses, to calculate internal forces and create Shear-force and Bending-moment diagrams.

Graduate Attributes

- Communication
- Problem Solving
- Critical Thinking
- Ethical practice

2 Assignment 1

Assessment Type

Written Assessment

Task Description

This assessment is designed to strengthen your understanding on Free-Body diagrams, Resolution of Forces, Calculation of Reactions and Truss analysis under different loading and support conditions. Assignment questions can be downloaded from the moodle site.

Assessment Due Date

Week 6 Tuesday (18 Apr 2017) 11:45 pm AEST

Return Date to Students

Two weeks after the due date

Weighting

20%

Minimum mark or grade

50%

Assessment Criteria

Each solution should have following items:

- Statement of a problem in your own words.
- Drawing of assumed sign Conventions, Free-Body and other diagrams as required for the solution.
- Statement of key information.
- Calculations with detail explanations.
- Final answers with magnitude, unit and direction as appropriate.

Note: If there are more than two errors (drawing, calculation, conceptual or error of any other kinds) in a solution, no marks will be awarded .

Referencing Style

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

Submission

Online

Learning Outcomes Assessed

- Analyse two dimensional force systems to determine resultant forces
- Calculate sectional properties such as centre of gravity, centroid and second moment of Inertia of simple structural forms
- Apply static equilibrium concepts to bodies with external forces and moments, create Free-body diagrams and determine support reactions
- Analyse statically determinate structures, including beams, frames and trusses, to calculate internal forces and create Shear-force and Bending-moment diagrams.
- Demonstrate a professional level of communication skills in written work

Graduate Attributes

- Communication
- Problem Solving
- Critical Thinking
- Ethical practice

3 Assignment 2

Assessment Type

Written Assessment

Task Description

This assessment will provide you an opportunity to show your understanding on Calculation of Internal forces and

Drawing of Internal Force diagrams and Frictions. Assignment questions can be downloaded from the moodle site.

Assessment Due Date

Week 10 Tuesday (16 May 2017) 11:45 pm AEST

Return Date to Students

Two weeks after the due date

Weighting

20%

Minimum mark or grade

50%

Assessment Criteria**Each solution should have following items:**

- Statement of a problem in your own words.
- Drawing of assumed sign Conventions, Free-Body and other diagrams as required for the solution.
- Statement of key information.
- Calculations with detail explanations.
- Final answers with magnitude, unit and direction as appropriate.

Note: If there are more than two errors (drawing, calculation, conceptual or error of any other kinds) in a solution, no marks will be awarded .

Referencing Style

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

Submission

Online

Learning Outcomes Assessed

- Analyse two dimensional force systems to determine resultant forces
- Calculate sectional properties such as centre of gravity, centroid and second moment of Inertia of simple structural forms
- Apply static equilibrium concepts to bodies with external forces and moments, create Free-body diagrams and determine support reactions
- Analyse statically determinate structures, including beams, frames and trusses, to calculate internal forces and create Shear-force and Bending-moment diagrams.
- Demonstrate a professional level of communication skills in written work

Graduate Attributes

- Communication
- Problem Solving
- Critical Thinking
- Ethical practice

Examination

Outline

Complete an invigilated examination

Date

During the examination period, at a CQUniversity examination centre

Weighting

40%

Length

180 minutes

Minimum mark or grade

50%

Details

Calculator - all non-communicable calculators, including scientific, programmable and graphics calculators are authorised

Dictionary - non-electronic, concise, direct translation only (dictionary must not contain any notes or comments).

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