



# ENAR12006 *Rock Engineering*

## Term 2 - 2023

Profile information current as at 29/04/2024 01:34 am

All details in this unit profile for ENAR12006 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

You will be introduced to critical concepts in the application of geo-technical methods to mining operations. The methods and procedures you will learn will cover rock testing, design of underground openings, and pillar and ground support design. You will gain an understanding of how underground mining methods can impact on infrastructure and aquifers through subsidence. You will also learn how to analyse the stability of slopes generated by open pit mining operations. Throughout the unit you will be required to demonstrate professional levels of teamwork and communication. In this unit, you must complete compulsory practical activities. Refer to the Engineering Undergraduate Course Moodle site for proposed dates.

#### 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

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 2 - 2023

- Mixed Mode

#### 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. **Portfolio**

Weighting: Pass/Fail

#### 3. **Practical Assessment**

Weighting: Pass/Fail

#### 4. **Written Assessment**

Weighting: 35%

#### 5. **Written Assessment**

Weighting: 45%

### 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**

Review course content to ensure it provides the most relevant material suitable for assignments and progress through the unit.

##### **Recommendation**

Structure course content to scaffold learning.

## Unit Learning Outcomes

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

1. Apply various methods of rock testing to determine the relevant design properties of specific rock types
2. Design openings, pillars and ground support for given situations in underground mining
3. Describe subsidence associated with various mining methods and identify its potential impact on infrastructure and aquifers
4. Analyse slope instabilities for given situations in surface mining operations
5. Demonstrate professional levels of teamwork and communication to support collaborative peer group learning.

**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: 5N )**

**Intermediate 1.2 Conceptual understanding of the mathematics, numerical analysis, statistics, and computer and information sciences which underpin the engineering discipline. (LO: 1N 2I 4N ) 1.4 Discernment of knowledge development and research directions within the engineering discipline. (LO: 1N 2I 3N 4N ) 1.6 Understanding of the scope, principles, norms, accountabilities and bounds of sustainable engineering practice in the specific discipline. (LO: 2I 3N ) 2.1 Application of established engineering methods to complex engineering problem solving. (LO: 1N 2I 3I 4N ) 2.2 Fluent application of engineering techniques, tools and resources. (LO: 1I 2I 4N ) 2.3 Application of systematic engineering synthesis and design processes. (LO: 1I 2I 4I ) 3.1 Ethical conduct and professional accountability. (LO: 1N 3I 5N ) 3.2 Effective oral and written communication in professional and lay domains. (LO: 1N 2I 3I 4N 5I ) 3.4 Professional use and management of information. (LO: 2I 3N 4N 5N ) 3.5 Orderly management of self, and professional conduct. (LO: 1I 2I 5N ) 3.6 Effective team membership and team leadership. (LO: 1N 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: 1N 2A 3N 4I ) 1.3 In-depth understanding of specialist bodies of knowledge within the engineering discipline. (LO: 1N 2A 3I 4N ) 1.5 Knowledge of engineering design practice and contextual factors impacting the engineering discipline. (LO: 2I 3A 4I )**

**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

 N/A Level	 Introductory Level	 Intermediate Level	 Graduate Level	 Professional Level	 Advanced Level
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### Alignment of Assessment Tasks to Learning Outcomes

Assessment Tasks	Learning Outcomes				
	1	2	3	4	5
1 - Written Assessment - 20%	•				
2 - Written Assessment - 35%		•		•	
3 - Written Assessment - 45%		•	•	•	
4 - Practical Assessment - 0%	•				•
5 - Portfolio - 0%					•

### 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 - Written Assessment - 20%	•	•	•	•		•		•		
2 - Written Assessment - 35%	•	•	•	•		•		•		
3 - Written Assessment - 45%	•	•	•	•		•		•		
4 - Practical Assessment - 0%	•	•	•	•	•	•	•	•		
5 - Portfolio - 0%	•		•					•		

## Textbooks and Resources

### Textbooks

There are no required textbooks.

### IT Resources

You will need access to the following IT resources:

- CQUniversity Student Email
- Internet
- Unit Website (Moodle)
- Spreadsheet Software
- Zoom

## Referencing Style

All submissions for this unit must use the referencing style: [Harvard \(author-date\)](#)  
For further information, see the Assessment Tasks.

## Teaching Contacts

**Andrew Hammond** Unit Coordinator  
[a.hammond@cqu.edu.au](mailto:a.hammond@cqu.edu.au)

## Schedule

### Week 1 - 10 Jul 2023

Module/Topic	Chapter	Events and Submissions/Topic
Unit Introduction Rock characterisation for rock mechanics design	Engineered Rock Structures in Mining and Civil and Construction. How to develop a study plan.	<b>Tutorial</b>

### Week 2 - 17 Jul 2023

Module/Topic	Chapter	Events and Submissions/Topic
Compressive, tensile and shear strength of rocks		<b>Tutorial</b>

### Week 3 - 24 Jul 2023

Module/Topic	Chapter	Events and Submissions/Topic
Time-dependent behaviour and index properties of rocks	Work through assignments and learning portfolio questions.	<b>Tutorial</b>
<b>Week 4 - 31 Jul 2023</b>		
Module/Topic	Chapter	Events and Submissions/Topic
Measurement and Analysis of stresses in rock		<b>Tutorial</b>  <b>Assignment 1</b> Due: Week 4 Friday (4 Aug 2023) 11:00 pm AEST
<b>Week 5 - 07 Aug 2023</b>		
Module/Topic	Chapter	Events and Submissions/Topic
Geomechanics instrumentation		<b>Tutorial</b>
<b>Vacation Week - 14 Aug 2023</b>		
Module/Topic	Chapter	Events and Submissions/Topic
		The timing of the residential school will be dependent on mine site availability. If a mine site is unavailable, the residential school will involve a lab session run on the Mackay Ooralea campus or the Rockhampton North campus, depending on staff availability.
<b>Week 6 - 21 Aug 2023</b>		
Module/Topic	Chapter	Events and Submissions/Topic
Engineering classification of rock masses		<b>Tutorial</b>
<b>Week 7 - 28 Aug 2023</b>		
Module/Topic	Chapter	Events and Submissions/Topic
Design of structures in rock		<b>Tutorial</b>  <b>Assignment 2</b> Due: Week 7 Friday (1 Sept 2023) 11:00 pm AEST
<b>Week 8 - 04 Sep 2023</b>		
Module/Topic	Chapter	Events and Submissions/Topic
Stability of underground openings		<b>Tutorial</b>
<b>Week 9 - 11 Sep 2023</b>		
Module/Topic	Chapter	Events and Submissions/Topic
Design and stability of pillars and associated structures		<b>Tutorial</b>
<b>Week 10 - 18 Sep 2023</b>		
Module/Topic	Chapter	Events and Submissions/Topic
Mine Support, mine subsidence and application of geomechanics		<b>Tutorial</b>
<b>Week 11 - 25 Sep 2023</b>		
Module/Topic	Chapter	Events and Submissions/Topic
Slope stability		<b>Tutorial</b>
<b>Week 12 - 02 Oct 2023</b>		
Module/Topic	Chapter	Events and Submissions/Topic

Unit review

Work through assignment and learning  
portfolio questions

**Tutorial**

### Review/Exam Week - 09 Oct 2023

Module/Topic

Chapter

Events and Submissions/Topic

**Assignment 3** Due: Review/Exam  
Week Wednesday (11 Oct 2023) 11:00  
pm AEST

### Exam Week - 16 Oct 2023

Module/Topic

Chapter

Events and Submissions/Topic

## Assessment Tasks

### 1 Assignment 1

#### Assessment Type

Written Assessment

#### Task Description

This assessment is designed to strengthen your understanding of rock characterization and how to measure the strength of rocks. You will need to carefully review the course material and answer the questions in the assignment. This assignment will cover work detailed in the first three weeks of the unit. A marking criteria sheet is also available in the assignment link. Use this sheet to check that you have addressed all assignment requirements.

To achieve this, you will need to:

- Review the detailed assignment questions found in Moodle.
- Review relevant literature (textbooks, websites, etc.) to understand better the processes and procedures associated with sampling and testing rocks.
- Research the primary literature to locate relevant current primary sources (scientific journal articles written in the last ten years)
- Complete the assignment questions in your own words, effectively using the sources of information.

Your assignment should be produced electronically using word processing and spreadsheet software. Submit your work through the assessment link on Moodle.

Note: All submissions are processed through the similarity detection software Turnitin. You must ensure all the work is your own, per University requirements. Correctly reference all sources of information using the CQU Harvard referencing style guide.

#### Assessment Due Date

Week 4 Friday (4 Aug 2023) 11:00 pm AEST

#### Return Date to Students

Vacation Week Friday (18 Aug 2023)

Within 2 weeks of receipt of assignment.

#### Weighting

20%

#### Minimum mark or grade

40%

#### Assessment Criteria

##### Structure

Cover Page showing unit code and name, student name and number, date, assignment number, lecturer, and university. An interesting picture related to the assignment work (cite and reference source). Correctly formatted table of contents, including a page for figures and tables. Include page headers and footers. State the assignment question at the beginning of each answer to give context to your answers. Include a reference list at the end of the assignment.

##### Content

For calculation-based questions, ensure formulae and workings are shown in sufficient detail to clearly explain how the answer was derived. Include screenshots of spreadsheets as figures within the text of your answer, where required. Also, include a spreadsheet as a separate submission. Ensure formulae are included in the spreadsheets so that you can enter different values to check the sensitivity of the answer. Formulae included in the spreadsheet need to be accessible for marking. Answers should show correct units of measurement, e.g. (m, MN, m<sup>2</sup>, tonnes, m<sup>3</sup>, °C, etc.).

Where appropriate, include clearly labelled diagrams detailing such things as,

- the dimensions of equipment and excavations
- angles of slopes
- coal thickness and overburden dimensions
- shapes of underground openings
- geometry of samples

For descriptive answers, use clear, coherent sentences. Ensure photographs, pictures and diagrams are correctly labelled and introduced within the preceding text. Use in-text citations and correctly reference all sources of information. Please include at least one reference from a journal paper from the CQU library (do not reference it as a webpage). Use mining terminology correctly. A more detailed and specific marking criteria sheet will be available to download from within the assignment link on Moodle.

### Referencing Style

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

### Submission

Online

### Submission Instructions

Assignments must be submitted using Moodle and Turnitin anti-plagiarism software.

### Learning Outcomes Assessed

- Apply various methods of rock testing to determine the relevant design properties of specific rock types

### Graduate Attributes

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

## 2 Learning Portfolio

### Assessment Type

Portfolio

### Task Description

The objectives of developing a learning portfolio include,

1. Provide the student with an opportunity to reflect on their learning.
2. Record work and reading not presented or assessed as part of the submitted assignments.
3. Provide students with an opportunity to discuss their learning experiences online.
4. Provide students with an opportunity to record and demonstrate evidence of all the learning outcomes detailed for this unit, particularly teamwork, cultural sensitivity and ethical values.

The learning portfolio will consist of two components,

- i) a study diary, including reflections on learning
- ii) evidence of learning outcomes.

A learning portfolio template will be available in the assignment link on Moodle. Detailed examples explaining what must be recorded in each element of the learning portfolio will also be available on Moodle.

### Assessment Due Date

Submit an update of the learning portfolio as a separate document with each of the three assignments.

### Return Date to Students

Within 2 weeks of assessment submission.

### Weighting

Pass/Fail

### Assessment Criteria

The assessment criteria for your learning portfolio will include,

- regular weekly entries in the study diary
- written entries about how the learning outcomes have been met

- records of interactions that seem relevant to this unit,

Interactions may be with the lecturer, other students or work colleagues. Interactions may be Zoom sessions, telephone conversations, emails, blog postings, or face-to-face meetings. Submit updates to the learning portfolio with each assignment submission. Achieving a Pass for this assessment requires some evidence recorded against each learning outcome.

### Referencing Style

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

### Submission

Online

### Submission Instructions

Submit the updated learning portfolio with each of the three assignments.

### Learning Outcomes Assessed

- Demonstrate professional levels of teamwork and communication to support collaborative peer group learning.

### Graduate Attributes

- Communication
- Critical Thinking
- Ethical practice

## 3 Practical Assessment - Rock Engineering Laboratory or Mine Site Visit.

### Assessment Type

Practical Assessment

### Task Description

The practical assessment will consist of a laboratory session or a visit to a mine site. The timing of the residential school will depend on the availability of a mine site visit. The laboratory session will be held during vacation week if a mine visit is not possible.

Part 1. Students will complete a laboratory session using a point-load rock testing machine and following a worksheet.

Part 2. Students will present their findings from their laboratory session to other students and available staff.

Alternatively, students visiting mine sites will present a rock engineering issue from the mine site to other students and available staff.

### Assessment Due Date

This assessment will be presented during the residential school.

### Return Date to Students

Within 2 weeks of the assessment submission.

### Weighting

Pass/Fail

### Assessment Criteria

Students will be assessed on their ability to,

- work as part of a team
- Comply with instructions from the mine site or laboratory personnel.
- Demonstrate an understanding of rock mechanics.
- Participate in risk assessment discussions.
- Present their findings

### Referencing Style

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

### Submission

Offline Group

### Submission Instructions

Students will be assessed on their presentation of activities completed during the residential school.

## Learning Outcomes Assessed

- Apply various methods of rock testing to determine the relevant design properties of specific rock types
- Demonstrate professional levels of teamwork and communication to support collaborative peer group learning.

## Graduate Attributes

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

## 4 Assignment 2

### Assessment Type

Written Assessment

### Task Description

This assessment will strengthen your understanding of the time-dependent behaviour of rock, the measurement and analysis of stress in the rock, and the classification of a rock mass. You will need to carefully review the course material and answer the questions in the assignment. This assignment will cover the unit's material detailed in weeks 4 to 6. A marking criteria sheet is also available in the assignment link. Use this sheet to check that you have addressed all assignment requirements.

To achieve this, you will need to:

- Review the detailed assignment questions found in Moodle.
- Review relevant literature (textbooks, websites, etc.) to gain an understanding of the time-dependent behaviour of rock, the measurement and analysis of stress and the classification of rock mass
- Research the primary literature to locate relevant current primary sources (scientific journal articles written in the last ten years)
- Complete the assignment questions in your own words, using reliable sources of information effectively.

Your assignment should be produced electronically using word processing and spreadsheet software. Submit your work through the assessment link on Moodle.

Note: All submissions are processed through the similarity detection software Turnitin. You must ensure all the work is your own, per University requirements. Correctly reference all sources of information using the CQU Harvard referencing style guide.

### Assessment Due Date

Week 7 Friday (1 Sept 2023) 11:00 pm AEST

### Return Date to Students

Within 2 weeks of receipt of assignment.

### Weighting

35%

### Minimum mark or grade

40%

### Assessment Criteria

#### Structure

Cover Page showing unit code and name, student name and number, date, assignment number, lecturer, and university. An interesting picture related to the assignment work (cite and reference source). Correctly formatted table of contents, including a page for figures and tables. Include page headers and footers. State the assignment question at the beginning of each answer to give context to your answers. Include a list of references at the end of the assignment.

#### Content

For calculation-based questions, ensure formulae and workings are shown in sufficient detail to clearly explain how the answer was derived. Include screenshots of spreadsheets as figures within the text of your response. Also, include a spreadsheet as a separate submission. Ensure formulae are included in the spreadsheets so that you can enter different values to check the sensitivity of the answer. Formulae included in the spreadsheet need to be accessible for marking.

Answers should show correct units of measurement, e.g. (m, MN, m<sup>2</sup>, tonnes, m<sup>3</sup>, °C, etc.).

Where appropriate, include clearly labelled diagrams detailing such things as,

- the dimensions of equipment and excavations
- angles of slopes
- coal thickness and overburden dimensions
- shapes of underground openings
- geometry of samples

For descriptive answers, use clear, coherent sentences. Ensure photographs, pictures and diagrams are correctly labelled and introduced within the preceding text. Use in-text citations and correctly reference all sources of information. Please include at least one reference from a journal paper from the CQU library (do not reference it as a webpage). Use mining terminology correctly. A more detailed and specific marking criteria sheet will be available to download from within the assignment link on Moodle.

### Referencing Style

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

### Submission

Online

### Submission Instructions

Assignments will be submitted using Moodle and Turnitin anti-plagiarism software.

### Learning Outcomes Assessed

- Design openings, pillars and ground support for given situations in underground mining
- Analyse slope instabilities for given situations in surface mining operations

### Graduate Attributes

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

## 5 Assignment 3

### Assessment Type

Written Assessment

### Task Description

This assessment is designed to deepen your knowledge of the application of ground support, ground monitoring, and excavation design to mitigate the risk of ground failures in various mining situations. You will need to carefully review the material in the textbook and answer the questions in the assignment. This assignment will cover the unit's material detailed in weeks 7 to 12. A marking criteria sheet is also available in the assignment link. Use this sheet to check that you have addressed all the assignment requirements.

To achieve this, you will need to:

- Review the detailed assignment questions found in Moodle.
- Review relevant literature (textbooks, websites, etc.) to better understand the risks of ground failure associated with mine excavations.
- Research the primary literature to locate relevant current primary sources (scientific journal articles written in the last ten years)
- Complete the assignment questions in your own words that make effective use of the sources of information.

Your assignment should be produced electronically using Word and Excel documents. Submit your work through the assessment link on Moodle.

Note: All submissions are processed through the similarity detection software Turnitin. You must ensure all the work is your own, per University requirements. Correctly reference all sources of information using the CQU Harvard referencing style guide.

### Assessment Due Date

Review/Exam Week Wednesday (11 Oct 2023) 11:00 pm AEST

### Return Date to Students

Within 2 weeks of receipt of assignment.

**Weighting**

45%

**Minimum mark or grade**

45%

**Assessment Criteria****Structure**

Cover Page showing unit code and name, student name and number, date, assignment number, lecturer, and university. An interesting picture related to the assignment work (cite and reference source). Correctly formatted table of contents, including a page for figures and tables. Include page headers and footers. State the assignment question at the beginning of each answer to give context to your answers. Include a list of references at the end of the assignment.

**Content**

For calculation-based questions, ensure formulae and workings are shown in sufficient detail to clearly explain how the answer was derived. Include screenshots of spreadsheets as figures within the text of your response. Also, include a spreadsheet as a separate submission. Ensure formulae are included in the spreadsheets so that you can enter different values to check the sensitivity of the answer. Formulae included in the spreadsheet need to be accessible for marking.

Answers should show correct units of measurement, e.g. (m, MN, m<sup>2</sup>, tonnes, m<sup>3</sup>, °C, etc.).

Where appropriate, include clearly labelled diagrams detailing such things as,

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For descriptive answers, use clear, coherent sentences. Ensure photographs, pictures and diagrams are correctly labelled and introduced within the preceding text. Use in-text citations and correctly reference all sources of information. Please include at least one reference from a journal paper from the CQU library (do not reference it as a webpage). Use mining terminology correctly. A more detailed and specific marking criteria sheet will be available to download from within the assignment link on Moodle.

**Referencing Style**

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

**Submission**

Online

**Submission Instructions**

Assignments will be submitted using Moodle and Turnitin anti-plagiarism software.

**Learning Outcomes Assessed**

- Design openings, pillars and ground support for given situations in underground mining
- Describe subsidence associated with various mining methods and identify its potential impact on infrastructure and aquifers
- Analyse slope instabilities for given situations in surface mining operations

**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