



ENER20002 Mining Engineering Systems and Legislation

Term 2 - 2021

Profile information current as at 25/04/2024 09:11 pm

All details in this unit profile for ENER20002 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 the systems and processes crucial to efficient mine design and operation. You will articulate a comprehensive understanding of current Australian coal and metalliferous mining operations and relevant mining Acts and Regulations. You will generate and evaluate fleet equipment selection processes and their likely ability to meet the requirements of scheduled mine production. This unit is delivered using a problem based learning model where you will be expected to work collaboratively in small teams and individually to produce high quality outputs. You will complete formative assessments throughout the unit, which will provide you with timely feedback. You will be graded on the evidence you submit in your assessments to address the performance standards of the given learning outcomes.

Details

Career Level: *Postgraduate*

Unit Level: *Level 8*

Credit Points: *12*

Student Contribution Band: *8*

Fraction of Full-Time Student Load: *0.25*

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 - 2021

- Melbourne
- Mixed Mode
- Perth
- 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 12-credit Postgraduate unit at CQUniversity requires an overall time commitment of an average of 25 hours of study per week, making a total of 300 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. **Report**

Weighting: 30%

2. **Report**

Weighting: 30%

3. **Reflective Practice Assignment**

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 Student feedback (telephone, emails and during tutorials).

Feedback

Students were disappointed that the highly successful mine site field trips of previous years were not on offer in 2020 due to the COVID-19 pandemic.

Recommendation

We aim to reinstate field trips in 2021 if given the clearance from Health and University management.

Feedback from Student feedback via telephone and emails

Feedback

Students appreciated the presence of leading mining professionals providing time to give talks to the class and the class given the opportunity to ask questions to these professionals.

Recommendation

To continue to ask leading mining industry professionals to provide talks in a range of discipline areas and current topics.

Feedback from This has been conveyed to staff by students who are on placements or now working in industry.

Feedback

Students appreciate the fact that we provide in-depth knowledge as to how the Australian mining industry operates.

Recommendation

Academic staff will continue to keep abreast and currency with issues, challenges and operational aspects of the Australian mining industry and pass this information onto our students.

Unit Learning Outcomes

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

1. Assess the processes and procedures that would demonstrate compliance with relevant Australian Mining Acts and Regulations in a variety of mining contexts
2. Identify and evaluate risks associated with different mining methods and operations
3. Evaluate prospecting and exploration in the Australian mining context
4. Present and defend a complex design and decision-making process
5. Work collaboratively in a team to produce high quality outputs.

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

- 1.3 In-depth understanding of specialist bodies of knowledge within the engineering discipline. (LO: 1N 2N 3N 4N 5N)
- 1.5 Knowledge of engineering design practice and contextual factors impacting the engineering discipline. (LO: 2N 4N 5N)
- 1.1 Comprehensive, theory-based understanding of the underpinning natural and physical sciences and the engineering fundamentals applicable to the engineering discipline. (LO: 1N 2N 3N 4I 5I)
- 2.3 Application of systematic engineering synthesis and design processes. (LO: 1N 2N 3N 4N 5N)
- 2.4 Application of systematic approaches to the conduct and management of engineering projects. (LO: 1N 2N 3N 4N 5N)
- 3.3 Creative, innovative and pro-active demeanour. (LO: 4N 5N)
- 3.5 Orderly management of self, and professional conduct. (LO: 4N 5N)

Intermediate

- 1.2 Conceptual understanding of the mathematics, numerical analysis, statistics, and computer and information sciences which underpin the engineering discipline. (LO: 2I 4N 5I)
- 1.4 Discernment of knowledge development and research directions within the engineering discipline. (LO: 1I 2N 3I 4I 5N)
- 2.1 Application of established engineering methods to complex engineering problem solving. (LO: 1I 2I 3N 4N 5N)
- 2.2 Fluent application of engineering techniques, tools and resources. (LO: 1N 2N 3N 4I 5N)
- 3.1 Ethical conduct and professional accountability. (LO: 1N 2I 3I 4I 5I)
- 3.2 Effective oral and written communication in professional and lay domains. (LO: 1N 2N 3N 4I 5N)
- 3.4 Professional use and management of information. (LO: 1N 2N 3N 4I 5N)
- 3.6 Effective team membership and team leadership. (LO: 1N 2N 3N 4N 5I)

Advanced

- 1.6 Understanding of the scope, principles, norms, accountabilities and bounds of sustainable engineering practice in the specific discipline. (LO: 1A 2I 3I 4N 5I)

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 Postgraduate Units 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=11382>

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 - Report - 30%	•		•		

Assessment Tasks	Learning Outcomes				
	1	2	3	4	5
2 - Report - 30%		•		•	•
3 - Reflective Practice Assignment - 40%	•	•	•	•	

Alignment of Graduate Attributes to Learning Outcomes

Graduate Attributes	Learning Outcomes				
	1	2	3	4	5
1 - Knowledge	○	○	○	○	
2 - Communication			○	○	○
3 - Cognitive, technical and creative skills		○	○	○	○
4 - Research	○	○	○	○	
5 - Self-management			○		○
6 - Ethical and Professional Responsibility	○	○			○
7 - Leadership				○	○
8 - 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
1 - Report - 30%	○	○	○	○	○	○		
2 - Report - 30%	○	○	○	○	○	○	○	
3 - Reflective Practice Assignment - 40%	○	○	○		○			

Textbooks and Resources

Textbooks

ENER20002

Prescribed

Introductory Mining Engineering

Edition: second (2002)

Authors: Howard L Hartman and Jan M Mutmanský

John Wiley and Sons

Hoboken , New Jersey , United States of America

ISBN: 978-0-471-34851-1

Binding: Hardcover

ENER20002

Prescribed

Ore Kit

Edition: Version 1 (2021)

School of Engineering and Technology

Binding: Other

Additional Textbook Information

Students will be provided Ore Kits at Melbourne, Rockhampton North and Perth Campuses by SET staff on the day the practical it to be run.

[View textbooks at the CQUniversity Bookshop](#)

IT Resources

You will need access to the following IT resources:

- CQUniversity Student Email
- Internet
- Unit Website (Moodle)
- Zoom (for online tutorials)

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

Schedule

Week 1 - 12 Jul 2021

Module/Topic	Chapter	Events and Submissions/Topic
Lecture 1a: Introduction to the unit Lecture 1b: Overview of Australian Resources & Mining Geography	Chapter 1, (Hartman & Mutmanský) Readings provided in Moodle	Tutorial: Undertaking assessment Items

Week 2 - 19 Jul 2021

Module/Topic	Chapter	Events and Submissions/Topic
--------------	---------	------------------------------

Lecture 2a: Introduction to Resource Geology & Mining Cycle Lecture 2b: Mineral Deposits and Ore Reserves	Chapter 3, (Hartman & Mutmansky) Readings provided in Moodle	Tutorial: Online Ore Minerals Practical
--	---	---

Week 3 - 26 Jul 2021

Module/Topic	Chapter	Events and Submissions/Topic
Lecture 3a: Resource Geology - Prospecting & Exploration Lecture 3b: Resource Geology - Prospecting & Exploration	Chapter 3, (Hartman & Mutmansky) Readings provided in Moodle	Tutorial: ALC Training

Week 4 - 02 Aug 2021

Module/Topic	Chapter	Events and Submissions/Topic
Lecture 4a: Australian Mining Legislation Lecture 4b: Working with Indigenous Communities	Readings provided in Moodle	Tutorial: Industry/Guest lecturer and current issues in resource industry

Week 5 - 09 Aug 2021

Module/Topic	Chapter	Events and Submissions/Topic
Lecture 5a & 5b: The JORC and VALMIN Codes in the Resource Industry	Readings provided in Moodle	Tutorial: Industry/Guest lecturer and current issues in resource industry Written Assessment 1 Due: Week 5 Friday (13 Aug 2021) 11:59 pm AEST

Vacation Week - 16 Aug 2021

Module/Topic	Chapter	Events and Submissions/Topic
Non Teaching Week		Tutorial: Industry/Guest lecturer and current issues in resource industry

Week 6 - 23 Aug 2021

Module/Topic	Chapter	Events and Submissions/Topic
Lecture 6a: Resource Geology Case Study - Metalliferous Ores (Gold) Lecture 6b: Resource Geology Case Study - Non Metalliferous Ores (Coal)	Readings provided in Moodle	Tutorial: Industry/Guest lecturer and current issues in resource industry

Week 7 - 30 Aug 2021

Module/Topic	Chapter	Events and Submissions/Topic
Lectures 7a & 7b: Mining Engineering & Phases of Mining	Readings provided in Moodle	Tutorial: Industry/Guest lecturer and current issues in resource industry

Week 8 - 06 Sep 2021

Module/Topic	Chapter	Events and Submissions/Topic
Lecture 8a: Mining Design and Planning - Open Cut Lecture 8b: Mining Design and Planning - Underground	Chapters 6, 7, 9, (Hartman & Mutmansky) Readings provided in Moodle	Tutorial: Industry/Guest lecturer and current issues in resource industry

Week 9 - 13 Sep 2021

Module/Topic	Chapter	Events and Submissions/Topic
Lecture 9a: Metalliferous Mining Legislation Lecture 9b: Production Management	Readings provided in Moodle	Tutorial: Industry/Guest lecturer and current issues in resource industry

Week 10 - 20 Sep 2021

Module/Topic	Chapter	Events and Submissions/Topic

Lecture 10a: Mine Management & Safety
Lecture 10b: Industrial Relations

Readings provided in Moodle

Tutorial: Industry/Guest lecturer and current issues in resource industry

Week 11 - 27 Sep 2021

Module/Topic

Chapter

Events and Submissions/Topic

Lectures 11a & b: Mine Closure & Rehabilitation

Readings provided in Moodle

Tutorial: Industry/Guest lecturer and current issues in resource industry

Week 12 - 04 Oct 2021

Module/Topic

Chapter

Events and Submissions/Topic

Lectures 12a & b: Unit Overview and Review

Readings provided in Moodle

Tutorial: Industry/Guest lecturer and current issues in resource industry

Written Assessment 2 Due: Week 12 Friday (8 Oct 2021) 11:59 pm AEST

Review/Exam Week - 11 Oct 2021

Module/Topic

Chapter

Events and Submissions/Topic

Exam Week - 18 Oct 2021

Module/Topic

Chapter

Events and Submissions/Topic

Assessment Tasks

1 Written Assessment 1

Assessment Type

Report

Task Description

The first assignment, 30% of the marks, will test your newly gained knowledge and skills on Australian Resources, Resource Geology, Australian Mining Legislation, working with indigenous communities and in sensitive ecological environments.

Your assignment must include a cover page showing the unit code and name, student name and number, assignment number, lecturer assessing the task and university. An interesting cover picture related to the assignment work would be appreciated. State each assignment question clearly at the beginning of each answer to give your answers context. For descriptive answers, ensure photographs, figures, diagrams and tables are correctly labelled and introduced within the context of the answer. Use suitable mining terminology when required and in its correct context.

Ensure research is from reliable sources such as peer reviewed journal articles, government web sites and textbooks. Cite all references using the CQUniversity Harvard referencing style guide. Include a list of references at the end of the assignment.

Ensure answers contain relevant and correct information and use clear, coherent sentences and follow English language rules.

Assessment Due Date

Week 5 Friday (13 Aug 2021) 11:59 pm AEST

Submit electronically via Moodle with your name & student number, unit code and assignment number i.e. NAME_ENAR20002_Assignment No. or TITLE

Return Date to Students

Week 7 Friday (3 Sept 2021)

Assessment items will be returned with the suffix MARKED placed on each script and returned via Moodle.

Weighting

30%

Minimum mark or grade

A minimum mark of 40% for this assessment item with an overall average mark of 50% or greater required for ALL 3 assessment items to PASS this unit

Assessment Criteria

Criteria that will be explored during weekly Zoom Tutorials and forums and then assessed for this assessment task will

include:

- Critical Thinking
- Ability to research and find appropriate material from the broader literature, besides supplied reference material
- Ability to organize and structure an assignment
- Readability and correct use of English grammar
- Well annotated and referenced maps, when and where appropriate
- Adequate review of peer-reviewed and published work
- Appropriate use of CQUniversity's Harvard Referencing system for correctly citing all sources of externally acquired material in-text and providing a consistent style for its end of assignment reference list
- Good use of tables and figures when deemed appropriate

An assessment rubric is to be found in the unit's Moodle site. This, along with ALC resources and technical exemplars, will provide further assessment support.

Referencing Style

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

Submission

Online

Submission Instructions

Upload your file to Moodle in MS Word Format (.doc or .docx) so that the marker can open the file in Word and use its marking tools

Learning Outcomes Assessed

- Assess the processes and procedures that would demonstrate compliance with relevant Australian Mining Acts and Regulations in a variety of mining contexts
- Evaluate prospecting and exploration in the Australian mining context

Graduate Attributes

- Knowledge
- Communication
- Cognitive, technical and creative skills
- Research
- Self-management
- Ethical and Professional Responsibility

2 Written Assessment 2

Assessment Type

Report

Task Description

Assessment Scenario

A mining company is undertaking an operations audit to determine how they might improve their mining operations in a safe, sustainable and productive manner. You have been seconded to a Project Management Team that is assessing the operations of both surface and underground mining methods.

As a member of the Project Management Team you will be working on such things as reviewing different mining methods, identifying the limiting factors for those mining methods and evaluating the mining methods in terms of safety, sustainability and productivity.

Your assignment should address the specific requirements detailed by the Project Management Team. Your contribution will be incorporated into a larger more comprehensive report. Therefore, it is very important that your contribution meets the requirements of the writing guide specified by the company and available on the Moodle website. Should Project Management accept all or part of your contribution to the preliminary operations audit, they plan to commission a much more detailed study on the aspects raised in the preliminary report. Consequently, it is important that you reference all of your sources and provide a rationale to support any recommendations made in your contributions.

All reports should be directed to:

Mr Brendan Donnelly,
Project Manager,
New Horizon Mining Pty Ltd

Each assignment should be presented in a report format to senior management and should include an: Executive Summary, an Introduction, Report Body, Recommendations, References and Appendices. This assignment should be seen as a "stand-alone " document.

NOTE: Further support on report writing, referencing and some technical exemplars will be provided in Moodle.

Assessment Due Date

Week 12 Friday (8 Oct 2021) 11:59 pm AEST

Submit electronically via Moodle with your name & student number, unit code and assignment number i.e. NAME_ENAR20002_Assignment No. or TITLE

Return Date to Students

Exam Week Friday (22 Oct 2021)

Assessment items will be returned with the suffix MARKED placed on each script and returned via Moodle.

Weighting

30%

Minimum mark or grade

A minimum mark of 40% for this assessment item with an overall average mark of 50% or greater required for ALL 3 assessment items to PASS this unit

Assessment Criteria

Objectives

This assessment item relates to the learning outcomes detailed in the unit profile.

Note:

Students should not directly copy the answers from the Study Guide and templates given in Moodle. They should write all of the answers out in their own words.

Marks will be deducted for poorly organised or explained solutions. Refer to the Task section in the Unit Profile regarding appropriate setting out and formatting of information.

Students are required to access information via the internet and CQUniversity library guides.

Assessment criteria for all students

20% of Assignment 2 marks are for Presentation, Layout and Referencing - includes the general appearance of the document or assignment, attention to document detail and quality to provide an easily legible document.

80% of Assignment 2 marks are for Content - includes the accuracy and relevance of answers, application of knowledge, language and grammar used in answering the questions.

Further support for writing, referencing and a further breakdown of marks is given in Moodle as a marking rubric for this question.

Referencing Style

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

Submission

Online

Submission Instructions

Upload your file to Moodle in Word Format (.doc or .docx) so that the marker can open the file in Word and use its marking tools

Learning Outcomes Assessed

- Identify and evaluate risks associated with different mining methods and operations
- Present and defend a complex design and decision-making process
- Work collaboratively in a team to produce high quality outputs.

Graduate Attributes

- Knowledge
- Communication
- Cognitive, technical and creative skills
- Research

- Self-management
- Ethical and Professional Responsibility
- Leadership

3 Reflective Practice Diary

Assessment Type

Reflective Practice Assignment

Task Description

Weekly Zoom Tutorial sessions will be undertaken in tandem with weekly lecture topics. Attendance at the Zoom Tutorial sessions is a requirement in this unit to explore and gain more in-depth discussions about the resource industry, its challenges, new and emerging technologies and its social licence to operate.

Your Reflective Practice Diary or Tutorial Workbook should capture your personal notes and data on: online ores practical exercise, ALC exercise/s, presentations from guest/industry lecturers, Question and Answer (Q&A) sessions with guest/industry lecturers, robust in-class discussions on current resource industry issues. You will need to submit a Weekly Reflective Practice Diary prior to the next weekly Zoom Tutorial. It must provide an overview of the Industry/Guest lecturers presentation, Q&As and/or resource topics discussed. A template on how this process is to be conducted will be the subject of your Week 1 Zoom Tutorial. The combined weight of these weekly Tutorials will contribute 40% towards your final mark.

Assessment Due Date

Submit individual updated diaries as notified in Moodle

Return Date to Students

Diary work files will have the suffix MARKED placed on each file and will be returned via Moodle.

Weighting

40%

Minimum mark or grade

An overall minimum mark of 40% for this assessment item with an overall average mark of 50% or greater required for ALL 3 assessment items to PASS this unit

Assessment Criteria

Criteria that will be assessed in diaries during the Weekly Zoom Tutorial sessions will include:

- Critical Thinking
- Ability to research and find appropriate material from the broader literature, besides supplied reference material
- Organisation and structure of the assignment
- Readability and grammar
- Well annotated and referenced maps, when and where appropriate
- Adequate review of published work
- Appropriate use of CQUniversity's Harvard Referencing system for correctly citing all sources of externally acquired material and providing a consistent style for its end of assignment reference list
- Good use of tables and figures when deemed appropriate

An assessment rubric is to be found in the unit's Moodle site. This, along with ALC resources and technical exemplars, will provide further assessment support.

Referencing Style

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

Submission

Online

Submission Instructions

Upload your file to Moodle in MS Word Format (.doc or .docx) so that the marker can open the file in Word and use its marking tools

Learning Outcomes Assessed

- Assess the processes and procedures that would demonstrate compliance with relevant Australian Mining Acts and Regulations in a variety of mining contexts
- Identify and evaluate risks associated with different mining methods and operations
- Evaluate prospecting and exploration in the Australian mining context

- Present and defend a complex design and decision-making process

Graduate Attributes

- Knowledge
- Communication
- Cognitive, technical and creative skills
- Self-management

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