ENER14002 *Resource Systems Feasibility Project*
Term 1 - 2023

All details in this unit profile for ENER14002 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 capstone unit will allow you to apply knowledge of data sets, data analysis, environmental constraints and mine design to a feasibility study for a proposed mining operation. You will enhance your understanding of drilling and blasting operations and data analysis to optimise the safety and productivity of a proposed mining project. You will develop a stakeholder management plan that enhances the operation's social licence to operate. You will apply schedules to the project to optimise the rate of return on the project balancing capital expenditure against forecast revenues.

Details

Career Level: *Undergraduate*
Unit Level: *Level 4*
Credit Points: *12*
Student Contribution Band: *8*
Fraction of Full-Time Student Load: *0.25*

Pre-requisites or Co-requisites

Pre-requisites: ENAR12013 Mine Planning and Design COIT12209 Data Science ENEG11007 Engineering Industry Project Investigation
Important note: Students enrolled in a subsequent unit who failed their pre-requisite unit, should drop the subsequent unit before the census date or within 10 working days of Fail grade notification. Students who do not drop the unit in this timeframe cannot later drop the unit without academic and financial liability. See details in the [Assessment Policy and Procedure (Higher Education Coursework)](#).

Offerings For Term 1 - 2023

- Online

Attendance Requirements

All on-campus students are expected to attend scheduled classes – in some units, these classes are identified as a mandatory (pass/fail) component and attendance is compulsory. International students, on a student visa, must maintain a full time study load and meet both attendance and academic progress requirements in each study period (satisfactory attendance for International students is defined as maintaining at least an 80% attendance record).

Website

[This unit has a website, within the Moodle system, which is available two weeks before the start of term. It is important that you visit your Moodle site throughout the term. Please visit Moodle for more information.](#)

Class and Assessment Overview

Recommended Student Time Commitment
Each 12-credit Undergraduate 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. **Portfolio**
Weighting: 20%
2. **Case Study**
Weighting: 20%
3. **Presentation**
Weighting: 20%
4. **Report**
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.

Unit Learning Outcomes

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

1. Research current environmental legislation related to resource systems
2. Apply data analysis to an existing data set to enhance the design of the proposed project
3. Schedule the project to optimise its safety, productivity and rate of return
4. Develop a stakeholder management plan to address community concerns and the operation's social licence to

operate

5. Communicate the results of your feasibility study via a professional level of presentation and a written report.

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:

Intermediate

1.3 In-depth understanding of specialist bodies of knowledge within the engineering discipline. (LO: 2I 5I)

1.4 Discernment of knowledge development and research directions within the engineering discipline. (LO: 1I 2N 5I)

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

2.2 Fluent application of engineering techniques, tools and resources. (LO: 2I 3I)

3.1 Ethical conduct and professional accountability. (LO: 4I)

Advanced

1.1 Comprehensive, theory-based understanding of the underpinning natural and physical sciences and the engineering fundamentals applicable to the engineering discipline. (LO: 2A)

1.2 Conceptual understanding of the mathematics, numerical analysis, statistics, and computer and information sciences which underpin the engineering discipline. (LO: 2A)

1.5 Knowledge of engineering design practice and contextual factors impacting the engineering discipline. (LO: 2I 4A 5I)

2.1 Application of established engineering methods to complex engineering problem solving. (LO: 1A 2A 3I 4I)

2.3 Application of systematic engineering synthesis and design processes. (LO: 2A)

2.4 Application of systematic approaches to the conduct and management of engineering projects. (LO: 1I 2A 3A 5A)

3.2 Effective oral and written communication in professional and lay domains. (LO: 2A 4A 5A)

3.3 Creative, innovative and pro-active demeanour. (LO: 1I 2I 3A)

3.4 Professional use and management of information. (LO: 1A 2I 5A)

3.5 Orderly management of self, and professional conduct. (LO: 2I 3I 4A 5A)

3.6 Effective team membership and team leadership. (LO: 4A 5A)

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

Alignment of Assessment Tasks to Learning Outcomes

Assessment Tasks	Learning Outcomes				
	1	2	3	4	5
1 - Presentation - 20%	●				
2 - Case Study - 20%		●			
3 - Portfolio - 20%	●	●	●	●	
4 - Report - 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					

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)

Referencing Style

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

Teaching Contacts

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Schedule

Week 1 - 06 Mar 2023

Module/Topic	Chapter	Events and Submissions/Topic
Introduction to capstone unit	Overview of course objectives and expectations Overview of • data sets • data analysis • environmental constraints • mine design	

Week 2 - 13 Mar 2023

Module/Topic	Chapter	Events and Submissions/Topic
Environmental legislation	Environmental legislation related to resource systems	

Week 3 - 20 Mar 2023

Module/Topic	Chapter	Events and Submissions/Topic
Case study	Review case study Review relevant data Define options Stakeholder impact	

Week 4 - 27 Mar 2023

Module/Topic	Chapter	Events and Submissions/Topic
Data analysis	Introduction to data analysis techniques	

Week 5 - 03 Apr 2023

Module/Topic	Chapter	Events and Submissions/Topic

Data analysis - application	Apply data analysis to a given data set	

Vacation Week - 10 Apr 2023

Module/Topic	Chapter	Events and Submissions/Topic

Week 6 - 17 Apr 2023

Module/Topic	Chapter	Events and Submissions/Topic
Project scheduling	Tasks Resources Safety Productivity	**Case Study** Due: Week 6 Friday (21 Apr 2023) 11:00 pm AEST

Week 7 - 24 Apr 2023

Module/Topic	Chapter	Events and Submissions/Topic
Developing a budget	Use the schedule to develop a budget Costs and revenue Rate of return	

Week 8 - 01 May 2023

Module/Topic	Chapter	Events and Submissions/Topic
Stakeholder management plan	Community concerns Social license to operate Risk assessment Impact on project	

Week 9 - 08 May 2023

Module/Topic	Chapter	Events and Submissions/Topic
Project Research	Reliable sources of information Citations and referencing	

Week 10 - 15 May 2023

Module/Topic	Chapter	Events and Submissions/Topic
Draft report	Communication and feedback	

Week 11 - 22 May 2023

Module/Topic	Chapter	Events and Submissions/Topic
Presentation	Persuasive Presentations	

Week 12 - 29 May 2023

Module/Topic	Chapter	Events and Submissions/Topic
Final Draft of Report	Review of course content Student feedback	

Review/Exam Week - 05 Jun 2023

Module/Topic	Chapter	Events and Submissions/Topic
		Report Due: Review/Exam Week Monday (5 June 2023) 11:00 pm AEST

Exam Week - 12 Jun 2023

Module/Topic	Chapter	Events and Submissions/Topic

Assessment Tasks

1 Portfolio

Assessment Type
Portfolio

Task Description
Your portfolio assessment will contain weekly entries about your learning experience for this unit.
Reflect on your learning each week, documenting what you have learned, what challenges you have faced, and what you have accomplished.
You will be required to submit updates on your portfolio every week.
Check the assessment item details in moodle for marking criteria. The emphasis will be on capturing and enhancing your learning rather than professional presentation skills.

Assessment Due Date

Submit updated portfolio on the Monday of weeks 2, 6, 10 and exam/review week.

Return Date to Students

Feedback will be proved within two weeks of submission.

Weighting
20%

Minimum mark or grade
50%

Assessment Criteria
The portfolio submission will be assessed on,
Relevance: Does the reflection report address the week's course content and learning objectives?
Clarity: Is the reflection report well-written and easy to understand? Does it communicate your learning and insights?
Evidence of learning: Does the reflection report demonstrate your understanding of the course material?
Reflection and self-awareness: Does the reflection report demonstrate your ability to reflect on your learning, identify areas of strength and weakness, and set future goals?
Evidence of critical thinking: Does the reflection report demonstrate your ability to think critically about the course material and to identify opportunities for improvement and innovation?
Timeliness: Are the reflection reports submitted on time?
These marking criteria will assist you in reflecting on your learning and demonstrate your mastery of the course content in a meaningful and effective way.

Referencing Style

- Harvard (author-date)

Submission
Online

Submission Instructions
Use the links in moodle to submit your assessment.

Learning Outcomes Assessed

- Research current environmental legislation related to resource systems
- Apply data analysis to an existing data set to enhance the design of the proposed project
- Schedule the project to optimise its safety, productivity and rate of return
- Develop a stakeholder management plan to address community concerns and the operation's social licence to operate

2 Case Study

Assessment Type
Case Study

Task Description
For the case study assessment item, complete the following tasks:
Conduct a thorough review of the relevant data, including production and safety, cost, and environmental impact data.
Analyze the potential benefits and costs of each option, taking into consideration the safety benefits, production benefits, and financial benefits of each option.
Evaluate the environmental impact of each option and consider any regulations or guidelines related to environmental sustainability that may apply.
Consider the costs associated with each option, including the initial capital costs, the ongoing operational costs, and any potential maintenance costs.

Assessment Due Date
Week 6 Friday (21 Apr 2023) 11:00 pm AEST

Return Date to Students
Week 8 Friday (5 May 2023)

Weighting
20%

Minimum mark or grade
45%

Assessment Criteria
Quality of data analysis: The quality of data analysis, including the accuracy, completeness, and relevance of the data used, and the rigour and effectiveness of the analysis methods used.
Clarity of findings and recommendations: Clarity, conciseness, and professionalism of the findings and recommendations, including appropriate data visualizations and written reports to communicate results effectively.
Relevance of findings and recommendations: The relevance of the results and recommendations to the mining operation and its stakeholders, including considerations of safety, production, financial performance, and environmental impact.
Evidence of critical thinking: Ability to apply critical thinking skills to the case study, including the ability to analyze and interpret data, identify key issues and challenges, and make well-supported recommendations.
Check the marking criteria on moodle to determine the specific weighting of each criterion depending on the particular requirements of the case study. The criteria may be adjusted as needed to best align with the overall goals and expectations of the unit.

Referencing Style

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

Submission
Online

Learning Outcomes Assessed

- Apply data analysis to an existing data set to enhance the design of the proposed project

3 Presentation

Assessment Type
Presentation

Task Description
Presentation preparation: Develop clear and concise slides and use appropriate data visualizations to communicate your project, results and recommendations effectively.
Rehearsal and practice: Rehearse and practice your presentation to effectively communicate your results and recommendations clearly and concisely within the given timeframe.
Live Presentation: Display a confident presence in person or on camera. Speak clearly and confidently. Do not read slides or material. Make eye contact.
Questions: Answer questions after the presentation to reveal your depth of knowledge of the project.

Assessment Due Date

Live presentations will be arranged during week 12 depending on availability of resources, academic staff and industry personnel.

Return Date to Students
Review/Exam Week Wednesday (7 June 2023)

Weighting
20%

Minimum mark or grade
50%

Assessment Criteria
Clear and concise slides.
Appropriate data visualizations.
Effective communication of results and recommendations.
Delivered within the given timeframe.
A confident presence in person or on camera.
Speaks clearly and confidently and engages the audience (eye contact).
Does not read from slides or other material.

Answers questions with in-depth knowledge of the project.

Referencing Style

- Harvard (author-date)

Submission
Offline Online

Learning Outcomes Assessed

- Research current environmental legislation related to resource systems

4 Report

Assessment Type
Report

Task Description
Engage an industry partner to supply a large data set associated with a mining-related problem or select a project in consultation with your lecturer.
Undertake relevant research of the project.
Conduct a thorough review of the relevant data, including production and safety, cost, and environmental impact data.
Analyse each option's potential benefits and costs, taking into consideration the safety, production, and financial benefits of each option.
Detail a stakeholder management plan to enhance a successful outcome for the project.
Detail a precise aim for the project and a set of objectives to achieve that aim. Review and clarify these elements regularly.
Evaluate the environmental impact of each option and consider any regulations or guidelines related to environmental sustainability that may apply.
Consider the costs associated with each option, including the initial capital costs, the ongoing operational costs, and any potential maintenance costs.

Assessment Due Date
Review/Exam Week Monday (5 June 2023) 11:00 pm AEST

Return Date to Students
Exam Week Friday (16 June 2023)

Weighting
40%

Minimum mark or grade
45%

Assessment Criteria
Quality of data analysis: The quality of the data analysis, including the accuracy, completeness, and relevance of the data used, and the rigour and effectiveness of the analysis methods used.
Clarity of findings and recommendations: The clarity, conciseness, and professionalism of the findings and recommendations, including appropriate data visualisations and written communication of results.
Relevance of findings and recommendations: The relevance of the results and recommendations to the mining operation and its stakeholders, including considerations of safety, production, financial performance, and environmental impact.
Evidence of critical thinking: Ability to apply critical thinking skills to the project, including the ability to analyse and interpret data, identify key issues and challenges, and make well-supported recommendations.
Structure of the report: The aim and objectives are well defined and reflected throughout the report's structure, the report uses citations and references correctly, and the report meets the overall objectives and expectations of the unit.
The specific weighting of each criterion may vary depending on the project's particular requirements, and the criteria may be adjusted as needed to best align with the overall goals and expectations of the unit.

Referencing Style

- Harvard (author-date)

Submission
No submission method provided.

Learning Outcomes Assessed

- Schedule the project to optimise its safety, productivity and rate of return
- Develop a stakeholder management plan to address community concerns and the operation's social licence to operate

- Communicate the results of your feasibility study via a professional level of presentation and a written report.

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