

Profile information current as at 06/05/2024 12:27 am

All details in this unit profile for ENEM13012 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 introduces you to the importance of effective maintenance management in the industry, the costs of maintenance, and the benefits of effective maintenance planning and strategies. Emphasis is placed on practical aspects of managing maintenance for plant and equipment. You are introduced to techniques and methods for monitoring the condition of plant and equipment, and to processes used to implement and manage condition monitoring. You will investigate maintenance problems and prepare plans to solve such problems. The unit delineates methods for assessing maintenance effectiveness and improving maintenance systems and provides a vehicle for developing skills for working and learning autonomously to solve problems, to document approaches used to solve problems, and to communicate professionally.

Details

Career Level: Undergraduate Unit Level: Level 3 Credit Points: 6 Student Contribution Band: 8 Fraction of Full-Time Student Load: 0.125

Pre-requisites or Co-requisites

Pre-requisite: ENEG12007 Design and Project Management

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 <u>Assessment Policy and</u> <u>Procedure (Higher Education Coursework)</u>.

Offerings For Term 2 - 2021

- Bundaberg
- Cairns
- Gladstone
- Mackay
- Online
- 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

<u>Metropolitan Campuses</u> Adelaide, Brisbane, Melbourne, Perth, Sydney

Assessment Overview

Written Assessment
Weighting: 15%
Written Assessment
Weighting: 25%
Presentation and Written Assessment
Weighting: 60%

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 <u>University's Grades and Results Policy</u> for more details of interim results and final grades.

CQUniversity Policies

All University policies are available on the <u>CQUniversity Policy site</u>.

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 <u>CQUniversity Policy site</u>.

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 Students conversation.

Feedback

Feedback turnaround time was in some cases long.

Recommendation

Lecturer will be reminded to prioritise returning marked assignments by the due date.

Feedback from Direct communication from student via phone.

Feedback

Assessment requirements are not clear.

Recommendation

A marking rubric with detailed assignment marking criteria will be uploaded on Moodle and assessment requirements will be exclusively discussed in the lecture and tutorial class a few times.

Unit Learning Outcomes

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

- 1. Explain the impact of maintenance on the business of industrial organisations and the need for maintenance management
- 2. Describe processes for developing maintenance strategies and plans including explanations of costs and benefits of maintenance management
- 3. Analyse techniques and methods for monitoring the condition of plant and equipment
- 4. Describe processes used to implement and manage condition monitoring programs for specific applications of plant and equipment
- 5. Investigate and analyse maintenance problems and develop plans to solve these problems
- 6. Apply methods for assessing maintenance effectiveness and methods for improving maintenance systems and control of maintenance
- 7. Work and learn autonomously to solve problems and record and communicate clearly and professionally the approaches used to solve problems and the rationale for adopting such approaches to problems.

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 1.5 Knowledge of engineering design practice and contextual factors impacting the engineering discipline. (LO: 1N 2N 4N 6N 7N) 3.1 Ethical conduct and professional accountability. (LO: 1N 2N 7N)

Intermediate 1.1 Comprehensive, theory-based understanding of the underpinning natural and physical sciences and the engineering fundamentals applicable to the engineering discipline. (LO: 1I 2I 3I 4I 5I 6I 7I) 1.2 Conceptual understanding of the mathematics, numerical analysis, statistics, and computer and information sciences which underpin the engineering discipline. (LO: 7I) 1.4 Discernment of knowledge development and research directions within the engineering discipline. (LO: 1I 2I 3I 4I 5I 6I 7I) 1.6 Understanding of the scope, principles, norms, accountabilities, and bounds of sustainable engineering practice in the specific discipline. (LO: 1I 2I 3I 4I 5I 6I 7I) 2.1 Application of established engineering methods to complex engineering problem solving. (LO: 1I 2I 3I 4I 5I 6I 7I) 2.2 Fluent application of engineering techniques, tools, and resources. (LO: 1N 2N 3I 4I 5I 6I 7I) 2.3 Application of systematic engineering synthesis and design processes. (LO: 1I 2I 3I 4I 5I 6I 7I) 2.4 Application of systematic approaches to the conduct and management of engineering projects. (LO: 7I) 3.2 Effective oral and written communication in professional and lay domains. (LO: 1I 2I 4I 6I 7I) 3.3 Creative, innovative, and pro-active demeanour. (LO: 1N 3I 4I 6I 7I) 3.4 Professional use and management of information. (LO: 1I 3I 4I 6I 7I) 3.5 Orderly management of self, and professional conduct. (LO: 3I 6I 7I) 3.6 Effective team membership and team leadership. (LO: 7I)

Advanced 1.3 In-depth understanding of specialist bodies of knowledge within the engineering discipline. (LO: 11 2A 31 4I 5I 6A 7I)

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<u>https://moodle.cqu.edu.au/course/view.php?id=1511</u>

Alignment of Learning Outcomes, Assessment and Graduate Attributes





Intermediate Graduate Level Level



Advanced Level

Alignment of Assessment Tasks to Learning Outcomes

Assessment Tasks	Learning Outcomes						
	1	2	3	4	5	6	7
1 - Written Assessment - 15%	•	•					
2 - Written Assessment - 25%	•	•	•	•	•	•	
3 - Presentation and Written Assessment - 60%			•	•	٠	٠	•

Alignment of Graduate Attributes to Learning Outcomes

Graduate Attributes	Learning Outcomes								
			1	2	3	4	5	6	7
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 A	Attrik	oute	es						
Assessment Tasks	Graduate Attributes								
	1	2	3	4	56	57	8	9	10
1 - Written Assessment - 15%	•	•	•	•			•		

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3 - Presentation and	Written	Assessment - 60%

2 - Written Assessment - 25%

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)
- Online Study Guide Available on Unit Moodle website
- Zoom Lecture and Tutorial Sessions

Referencing Style

All submissions for this unit must use the referencing style: <u>Harvard (author-date)</u> For further information, see the Assessment Tasks.

Teaching Contacts

Abdul Mazid Unit Coordinator a.mazid@cqu.edu.au

Schedule

Week 1 - 12 Jul 2021		
Module/Topic	Chapter	Events and Submissions/Topic
Module 1: Introduction to Maintenance and Appendix 1: Terminology	Module 1: Study guide in unit Moodle website	Assessment 1 Task Part A: Project Topic Verification: prior to Friday of Week 1 Zoom lecture sessions
Week 2 - 19 Jul 2021		
Module/Topic	Chapter	Events and Submissions/Topic
Module 1: Introduction to Maintenance	Module 1: Study guide (Access on Moodle Site)	Assessment 1 Task Part A: written verification of acceptance prior to the Monday of Week 2 from your lecturer. Zoom lecture sessions. Check regular announcement on unit Moodle website.
Week 3 - 26 Jul 2021		
Module/Topic	Chapter	Events and Submissions/Topic
Module 2: Principles of Management	Module 2: Study guide (Access on Moodle Site)	Zoom lecture sessions. Check regular announcement on unit Moodle website.
Week 4 - 02 Aug 2021		
Module/Topic	Chapter	Events and Submissions/Topic
Module 2: Principles of Management	Module 2: Study guide (Access on Moodle Site)	Zoom lecture sessions. Check regular announcement on unit Moodle website.

Week 5 - 09 Aug 2021				
Module/Topic	Chapter	Events and Submissions/Topic Zoom lecture sessions. Check regular		
Module 2: Principles of Management	Module 2: Study guide (Access on Moodle Site)	announcement on unit Moodle website.		
		Assessment Task 1 Due: Week 5 Friday (13 Aug 2021) 12:00 am AEST		
Vacation Week - 16 Aug 2021				
Module/Topic	Chapter	Events and Submissions/Topic		
VACATION		NO TEACHING THIS WEEK		
Week 6 - 23 Aug 2021				
Module/Topic	Chapter	Events and Submissions/Topic		
Module 3: Financial Analysis and Maintenance Management	Module 3: Study guide (Access on Moodle Site)	Zoom lecture sessions. Check regular announcement on unit Moodle website.		
Week 7 - 30 Aug 2021				
Module/Topic	Chapter	Events and Submissions/Topic		
Module 3: Financial Analysis and Maintenance Management	Module 3: Study guide (Access on Moodle Site)	Zoom lecture sessions. Check regular announcement on unit Moodle website.		
Week 8 - 06 Sep 2021				
Module/Topic	Chapter	Events and Submissions/Topic		
Module 4: Maintenance Management Techniques (1)	Module 4: Study guide (Access on Moodle Site)	Zoom lecture sessions. Check regular announcement on unit Moodle website.		
Week 9 - 13 Sep 2021				
Module/Topic	Chapter	Events and Submissions/Topic		
Module 4: Maintenance Management Techniques (1)	Module 4: Study guide (Access on Moodle Site)	Zoom lecture sessions. Check regular announcement on unit Moodle website.		
Week 10 - 20 Sep 2021				
Module/Topic	Chapter	Events and Submissions/Topic		
Appendix 2: Mathematics Supplement Appendix 2 and 3 : Study guide		Zoom lecture sessions. Check regular announcement on unit Moodle website.		
		Assessment Task 2 Due: Week 10 Friday (24 Sept 2021) 12:00 am AEST		
Week 11 - 27 Sep 2021				
Module/Topic	Chapter	Events and Submissions/Topic		
Module 5: Maintenance Management Techniques (2)	Module 5: Study guide (Access on Moodle Site)	Zoom lecture sessions. Check regular announcement on unit Moodle website.		
Week 12 - 04 Oct 2021				
Module/Topic	Chapter	Events and Submissions/Topic		
Module 5: Maintenance Management Techniques (2)	Module 5: Study guide (Access on Moodle Site)	Zoom lecture sessions. Check regular announcement on unit Moodle website.		
Review/Exam Week - 11 Oct 2021				
Module/Topic	Chapter	Events and Submissions/Topic		

Module/Topic

Chapter

Events and Submissions/Topic

Assessment Tasks

1 Assessment Task 1

Assessment Type Written Assessment

Task Description

Refer to the Moodle site for **complete details** of the assessment items. This is only a basic outline of the features relating to the assessment task. This assessment has two parts.

Part A:

Project Tropic Verification - Identification of an appropriate Maintenance Problem currently exists in your organisation.

Prior to Friday of Week 1 you need to discuss and submit the 'Identification of Maintenance Problem: Proposal Form" to your lecturer's CQU email address and then receive written verification of acceptance prior to the Monday of Week 2 from your lecturer regarding the appropriateness and viability of your chosen organisation and the identified maintenance problem as a focus for all assessment tasks in this unit.

Part B:

Outline Organisational Description including Organisational Structure existing in the organisation and Define Maintenance Problem

The aim of Assessment 1 is to select **one** problem or opportunity within the maintenance function within your chosen organisation that could be solved using basic concepts of maintenance, management theories, maintenance principle and maintenance management techniques and principles presented in your Study Guide.

Remember your study approach should not be limited to unit Study Guide only. You are encouraged to study and investigate further beyond the unit materials.

You will need to complete and submit through the Assessment submission link in the unit Moodle website, an appropriately referenced, written investigative report, including appropriate descriptions, analysis, documentation with appropriate figures, charts and tables support relevant to your assessment task. Study Module 1 and Module 2 in your Unit Study Guide should be supportive to complete your Assessment 1.

Assessment Due Date

Week 5 Friday (13 Aug 2021) 12:00 am AEST Please submit only Microsoft Word document No PDF file Submission will be accepted for any task

Return Date to Students

Week 7 Friday (3 Sept 2021) Expected return 2 weeks after submission due date.

Weighting

15%

Minimum mark or grade 50% of the weighting

Assessment Criteria

Refer to the Moodle site for complete details of the Assessment Criteria sheet for Assessment 1. This is only a basic outline of the features relating to the assessment task. Each submission will be assessed for presentation and layout, correct procedure, analysis and accuracy and appropriate referencing. The major assessment criteria relate to Analysis & Interpretation, Communication and Information Literacy. Please read carefully the details outlined in the Assessment 1 Assessment Criteria sheet **before** commencing the assessment item.

As you undertake the Assessment 1 ensure you address all assessment criteria outlined.

Referencing Style

• Harvard (author-date)

Submission

Online

Submission Instructions

Check in the Moodle for appropriate file name protocol for different files.

Learning Outcomes Assessed

- Explain the impact of maintenance on the business of industrial organisations and the need for maintenance management.
- Describe processes for establishing maintenance needs of engineering operations, and developing maintenance plans and strategies, and explain costs and benefits of maintenance management.
- Describe techniques and methods for monitoring the condition of plant and equipment.
- Describe processes used to implement and manage condition monitoring programs for specific applications of plant and equipment.
- Work and learn autonomously to solve problems and record and communicate clearly and professionally the approaches used to solve problems and the rationale for adopting such approaches to problems.

Graduate Attributes

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

2 Assessment Task 2

Assessment Type

Written Assessment

Task Description

Develop an investigative report on the Maintenance Problem you have chosen as a project in your

Assessment 1. This report should cover In-depth problem Analysis, conduct relevant literature review and develop solutions as strategies to solve the maintenance problem.

Refer to the Moodle site for **complete details** of the assessment item. This is only a basic outline of the features relating to the Assessment 2.

The aim of Assessment Task 2 is to discuss in detail upon your chosen maintenance problem, defined in Assessment 1, and to provide detailed insights into the technique you will adopt to address this problem. Your solution needs to focus upon using concept of maintenance, theories of management, maintenance

management techniques and principles presented in Unit Study Guide available in the unit Moodle website. You need to Study Module 3, Module 4 and Module 5 in your Unit Study Guide. As you have already studied Module 1 and Module 2 to define your project for Assessment 1, it should be supportive in your report writing for this Assessment. should be supportive to complete your Assessment 1. Remember your study approach should not be limited to unit Study Guide only. You are encouraged to study and investigate further beyond the unit materials.

You will need to complete and submit through the Assessment submission link in the unit Moodle website, an appropriately referenced, written investigative report, including appropriate descriptions, analysis, documentation with appropriate figures, charts and tables support relevant to your assessment task.

Assessment Due Date

Week 10 Friday (24 Sept 2021) 12:00 am AEST Please submit only Microsoft Word document No PDF file Submission will be accepted for any task

Return Date to Students

Week 12 Friday (8 Oct 2021) Assessment feedback should be available 2 weeks after submission. However grade will be available after unit moderation.

Weighting

25%

Minimum mark or grade 50% of the weighting

Assessment Criteria

Refer to the Moodle site for complete details of the Assessment Criteria sheet for Assessment 2. This is only a basic outline of the features relating to the assessment task. Each submission will be assessed for presentation and layout, correct procedure, analysis and accuracy and appropriate referencing. The major assessment criteria relate to Analysis & Interpretation, Communication and Information Literacy. Please read carefully the details outlined in the Assessment 2 Assessment Criteria sheet **before** commencing the assessment item.

As you undertake the Assessment 2 ensure you address all assessment criteria outlined.

Referencing Style

• Harvard (author-date)

Submission

Online

Submission Instructions

Check in the Moodle for appropriate file name protocol for different files. No PDF file Submission for any task

Learning Outcomes Assessed

- Explain the impact of maintenance on the business of industrial organisations and the need for maintenance management.
- Describe processes for establishing maintenance needs of engineering operations, and developing maintenance plans and strategies, and explain costs and benefits of maintenance management.
- Describe techniques and methods for monitoring the condition of plant and equipment.
- Describe processes used to implement and manage condition monitoring programs for specific applications of plant and equipment.
- Investigate and analyse maintenance problems and develop plans to solve these problems.
- Describe methods for assessing maintenance effectiveness and methods for improving maintenance systems and control of maintenance.
- Work and learn autonomously to solve problems and record and communicate clearly and professionally the approaches used to solve problems and the rationale for adopting such approaches to problems.

Graduate Attributes

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

3 Assessment Task 3

Assessment Type

Presentation and Written Assessment

Task Description

To complete Assessment 3 you will develop and submit two items based on the report you submit in

Assessment 2:

Your Video Presentation file for the project

And your Power Point Presentation Slides

Refer to the Moodle site for **complete details** of the Assessment 3. This is only a basic outline of the features relating to the assessment task. You must provide detailed and appropriately referenced descriptions, diagrams, discussions and analysis in order to demonstrate your knowledge and understanding of concepts and processes.

The aim of Assessment 3 is to present complete solution for your project undertaken, in a cohesive and holistic form. In investigating, analysing and finding an appropriate solution to the maintenance problem you have chosen in Assessment 1, you need to use maintenance management techniques, theories, principles and modelling extensively (e.g. Financial Analysis/Modeling, Life Cycle Management and Cost Modelling, Work Study, Queuing Theory, Statistical Failure Analysis, Reliability/RAMS Modelling FMECA, Planned Maintenance Optimisation, Pareto Analysis, Control Charts, etc.).

Assessment Due Date

Review/Exam Week Monday (11 Oct 2021) 12:00 am AEST Please submit only Microsoft Word document No PDF file Submission will be accepted for any task

Return Date to Students

Exam Week Friday (22 Oct 2021) Assessment feedback and final grade will be available after unit moderation.

Weighting

60%

Minimum mark or grade 50% of the weighting

Assessment Criteria

Refer to the Moodle site for complete details of the Assessment Criteria sheet for Assessment 3. This is only a basic outline of the features relating to the assessment task. Each submission will be assessed for presentation and layout, correct procedure, analysis and accuracy and appropriate referencing. The major assessment criteria relate to Analysis & Interpretation, Communication and Information Literacy. Please read carefully the details outlined in the Assessment 3 Assessment Criteria sheet **before** commencing the assessment item.

As you undertake the Assessment 3 ensure you address all assessment criteria outlined.

Referencing Style

• Harvard (author-date)

Submission

Online

Submission Instructions

Check in the Moodle for appropriate file name protocol for different files.

Learning Outcomes Assessed

- Explain the impact of maintenance on the business of industrial organisations and the need for maintenance management.
- Describe processes for establishing maintenance needs of engineering operations, and developing maintenance plans and strategies, and explain costs and benefits of maintenance management.
- Describe techniques and methods for monitoring the condition of plant and equipment.
- Describe processes used to implement and manage condition monitoring programs for specific applications of plant and equipment.
- Investigate and analyse maintenance problems and develop plans to solve these problems.
- Describe methods for assessing maintenance effectiveness and methods for improving maintenance systems and control of maintenance.
- Work and learn autonomously to solve problems and record and communicate clearly and professionally the approaches used to solve problems and the rationale for adopting such approaches to problems.

Graduate Attributes

- Communication
- Problem Solving
- Critical Thinking
- Information Literacy
- 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 <u>Academic Learning Centre (ALC)</u> can support you in becoming confident in completing assessments with integrity and of high standard.

What can you do to act with integrity?





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