



ENEM14014 Capstone Thermofluid Engineering

Term 1 - 2025

Profile information current as at 13/02/2025 11:58 am

All details in this unit profile for ENEM14014 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 provides you with opportunities to develop and demonstrate your professional capabilities in the field of thermofluid engineering. You will analyse, explain and evaluate the performance of air-conditioning and refrigeration plant; and mass, heat and energy transfer processes in industrial plant and processes. You will describe types and characteristics of fluid machinery, apply the theory of energy transfer to its operation, and analyse complex fluid flows using computational methods. You will then apply discipline theories and methods to design, implementation, operation and maintenance of industrial mechanical systems. You are required to show you can work both individually and collaboratively, to solve problems, and document and communicate their work clearly in a professional manner. 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 4*

Credit Points: *12*

Student Contribution Band: *8*

Fraction of Full-Time Student Load: *0.25*

Pre-requisites or Co-requisites

ENEM13014 Thermodynamics or ENEM12003 Thermodynamics] and ENEM12006 Fluid Mechanics [or ENEM12001 Fluid Mechanics

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 - 2025

- Bundaberg
- Cairns
- Gladstone
- Mackay
- Mixed Mode
- 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 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. **Presentation and Written Assessment**

Weighting: 25%

2. **Presentation and Written Assessment**

Weighting: 20%

3. **Practical and Written Assessment**

Weighting: 20%

4. **In-class Test(s)**

Weighting: 35%

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 evaluation

Feedback

Provided clear and knowledgeable explanations and feedback

Recommendation

This feedback should be maintained.

Feedback from Student evaluation

Feedback

Encouraged students to interact and showed passion and enthusiasm for the discipline

Recommendation

Interaction between the students and facilitator is important. This strategy of creating interaction should be maintained.

Feedback from Student evaluation

Feedback

Use more examples or elaboration

Recommendation

More real-world examples should be provided.

Feedback from Student evaluation

Feedback

Make sure the feedback is clear and useable and be mindful of student diversity

Recommendation

More explanation should be provided in the feedback which will be useful for all diverse students.

Unit Learning Outcomes

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

1. Analyse, explain and evaluate performance characteristics and determine load on air conditioning and refrigeration plants
2. Analyse, explain and evaluate mass, energy and heat transfer processes in industrial plant and components, and industrial processes
3. Describe types and characteristics fluid machinery and apply and explain the theory of energy transfer to its operation in engineering applications
4. Explain and analyse complex flows and computational fluid dynamics methods in such flows
5. Apply discipline theories and methods to the problems of designing, implementing, operating and maintaining mechanical systems in industrial contexts
6. Communicate professionally and provide evidence of personal reflection on, and critical assessment of, team contributions and professional development, and development of technical competence in thermofluid engineering
7. Reflect upon, formulate and solve problems and record and communicate professionally the approach used to resolve problems and the reasons 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

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

Intermediate

1.3 In-depth understanding of specialist bodies of knowledge within the engineering discipline. (LO: 1I 2I 3I 4I 5I)

1.5 Knowledge of engineering design practice and contextual factors impacting the engineering discipline. (LO: 1I 2I 3I 4I 5I)

3.1 Ethical conduct and professional accountability. (LO: 1I 2I 3N 4N 5N 6I 7I)

3.3 Creative, innovative and pro-active demeanour. (LO: 1I 2I 3N 4N 5N)

3.4 Professional use and management of information. (LO: 1I 2I 3I 4I 5I 6I 7I)

Advanced

1.1 Comprehensive, theory-based understanding of the underpinning natural and physical sciences and the engineering fundamentals applicable to the engineering discipline. (LO: 1A 2A 3I 4N 5I)

1.2 Conceptual understanding of the mathematics, numerical analysis, statistics, and computer and information sciences which underpin the engineering discipline. (LO: 1A 2A 3I 4I 5A)

1.4 Discernment of knowledge development and research directions within the engineering discipline. (LO: 1A 2I 3I 4I 5I)

2.1 Application of established engineering methods to complex engineering problem solving. (LO: 1A 2A 3I 4I 5I)

2.2 Fluent application of engineering techniques, tools and resources. (LO: 1A 2A 3I 4A 5N)

2.3 Application of systematic engineering synthesis and design processes. (LO: 1A 2A 3I 4A 5I)

2.4 Application of systematic approaches to the conduct and management of engineering projects. (LO: 1A 2A 3I 4A 5I)

3.2 Effective oral and written communication in professional and lay domains. (LO: 1A 2A 3A 4A 5A 6A 7A)

3.6 Effective team membership and team leadership. (LO: 6A 7A)

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



Alignment of Assessment Tasks to Learning Outcomes

Assessment Tasks	Learning Outcomes						
	1	2	3	4	5	6	7
1 - Presentation and Written Assessment - 25%	•	•		•	•	•	•
2 - Presentation and Written Assessment - 20%			•		•	•	•
3 - Practical and Written Assessment - 20%	•	•	•			•	
4 - In-class Test(s) - 35%	•	•	•	•	•		•

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							

Textbooks and Resources

Information for Textbooks and Resources has not been released yet.

This information will be available on Monday 17 February 2025

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