In Progress

Please note that this Unit Profile is still in progress. The content below is subject to change.

ENEM13014 *Thermodynamics*

Term 2 - 2024

Profile information current as at 13/05/2024 12:25 am

General Information

Overview

The unit will introduce the laws of thermodynamics, energy, work, and heat transfer in liquids and gasses. You will learn how to analyse and solve problems on heat engines, refrigeration, heat pumps as well as Rankine and Brayton cycles. You will develop the capacity to work, learn, and communicate ethically and professionally, as individuals and in teams, to investigate, solve problems, prepare technical and laboratory reports, and evaluate uncertainties and the results of your work. 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 3*
Credit Points: *6*
Student Contribution Band: *8*
Fraction of Full-Time Student Load: *0.125*

Pre-requisites or Co-requisites

Prerequisites: MATH11218 Applied Mathematics and ENEG11009 Fundamentals of Energy & Electricity.
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 - 2024

- 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).

Residential Schools

This unit has a Compulsory Residential School for distance mode students and the details are:
Click here to see your Residential School Timetable.

Website

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

Class and Assessment Overview

Recommended Student Time Commitment

Each 6-credit Undergraduate unit at CQUniversity requires an overall time commitment of an average of 12.5 hours of study per week, making a total of 150 hours for the unit.

Class Timetable

Regional Campuses
Bundaberg, Cairns, Emerald, Gladstone, Mackay, Rockhampton, Townsville

Metropolitan Campuses
Adelaide, Brisbane, Melbourne, Perth, Sydney

Assessment Overview

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
Tutorial/example questions should be done from start to finish instead of explaining the concept only.

Recommendation
More time will be taken to go through the start to finish of tutorial/example questions and clear explanations will be provided in the coming years.

Feedback from Student evaluation.

Feedback
There were some issues with understanding the goal of some questions, though it is non-critical.

Recommendation
Some more background information will be provided to make the students understand the goal of the questions.

Feedback from Student evaluation

Feedback
Unit Coordinator's understanding and delivery of the content made this unit enjoyable and engaging.

Recommendation
A similar or improved standard will be maintained in the coming years.

Feedback from Student evaluation.

Feedback
The exam was difficult and needed more time/ resources.

Recommendation
The exam was open book. These comments will be taken into consideration in the coming years during setting up the question paper.

Unit Learning Outcomes

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

1. Analyse the flow and non-flow processes using tables of properties of fluids, P-v-T, P-v, and T-v diagrams
2. Explain the first and second law of thermodynamics and their limitations
3. Analyse the heat energy cycles for a variety of heat engine, refrigeration, and heat pump cycles
4. Analyse Rankine and Brayton cycles including their T-s diagrams and practical applications
5. Prepare technical and laboratory reports with a thorough evaluation of experimental uncertainties and results obtained in an ethical and professional manner both individually and in teams.

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

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

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

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

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

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

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

Advanced

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

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

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

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

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

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

3.1 Ethical conduct and professional accountability. (LO: 5A)

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

3.5 Orderly management of self, and professional conduct. (LO: 1N 2N 3I 4N 5A)

3.6 Effective team membership and team leadership. (LO: 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 - Written Assessment - 15%	•	•			
2 - Written Assessment - 15%			•	•	
3 - Practical Assessment - 20%					•
4 - Examination - 50%	•	•	•	•	

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

Information for Textbooks and Resources has not been released yet.

This information will be available on Monday 17 June 2024

Academic Integrity Statement

Information for Academic Integrity Statement has not been released yet.

This unit profile has not yet been finalised.