

## In Progress

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



# **ENEG11009 *Fundamentals of Sustainable Energy***

## **Term 2 - 2024**

Profile information current as at 19/05/2024 07:07 am

All details in this unit profile for ENEG11009 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

Sustainable engineering practices and climate change are critical topics in current socio-economic and political settings. Meeting the world's energy demand through renewable energy sources and exploring carbon-free alternative energy sources are the highly sought-after solutions. In this unit, you will learn how to apply fundamental laws of physics related to energy and electricity to solve engineering problems. You will also learn the concepts of voltage, and current and use Kirchhoff's laws to analyse simple direct current (DC) circuits, and learn the fundamentals of alternating currents (AC). This unit also investigates current and future sustainable energy sources comprising solar, wind, hydro, and hydrogen, and relevant production processes. This unit also explores the effects of climate change on using renewable energy and the challenges faced in integrating renewable energy into the primary grid. This unit will promote progress toward the United Nation's Sustainable Development Goal 7 - Affordable and Clean Energy.

### Details

Career Level: *Undergraduate*

Unit Level: *Level 1*

Credit Points: 6

Student Contribution Band: 8

Fraction of Full-Time Student Load: 0.125

### 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 - 2024

- 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

#### [Metropolitan Campuses](#)

Adelaide, Brisbane, Melbourne, Perth, Sydney

### Assessment Overview

#### 1. **Online Quiz(zes)**

Weighting: 30%

#### 2. **Case Study**

Weighting: 30%

#### 3. **Project (applied)**

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 Unit Coordinator Reflection

**Feedback**

Too much contents were condensed in the first 3 weeks.

**Recommendation**

Unit contents should be distributed across all weeks.

#### Feedback from Unit Coordinator Reflection

**Feedback**

Some students found some contents taught within this unit too hard to comprehend.

**Recommendation**

Contents should be reviewed to suit a first-year introductory unit.

#### Feedback from Unit evaluation

**Feedback**

Students found usefulness of unit learning materials were little bit low

**Recommendation**

Learning resources should be reviewed.

## Unit Learning Outcomes

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

1. Solve engineering problems incorporating energy, work, heat, and heat transfer.
2. Understand the electrical fundamentals, including current, voltage, and resistance.
3. Analyse basic direct current (DC) circuits.
4. Understand the fundamentals of alternating currents (AC) and voltages, their generation, and applications.
5. Explore different renewable energy sources, their production processes, storage, applications, and integration into existing systems.
6. Produce a professional report by investigating technical and socio-economic aspects on a given renewable energy application.

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

- 1.1 Comprehensive, theory-based understanding of the underpinning natural and physical sciences and the engineering fundamentals applicable to the engineering discipline. (LO: 1N 2N 3N 4N)
- 1.4 Discernment of knowledge development and research directions within the engineering discipline. (LO: 5N 6N)
- 1.5 Knowledge of engineering design practice and contextual factors impacting the engineering discipline. (LO: 5N)
- 1.6 Understanding of the scope, principles, norms, accountabilities, and bounds of sustainable engineering practice in the specific discipline. (LO: 5N 6N)
- 2.1 Application of established engineering methods to complex engineering problem solving. (LO: 5N 6N)
- 2.4 Application of systematic approaches to the conduct and management of engineering projects. (LO: 6N)
- 3.1 Ethical conduct and professional accountability. (LO: 6N)
- 3.3 Creative, innovative, and pro-active demeanour. (LO: 6N)

#### Intermediate

- 1.2 Conceptual understanding of the mathematics, numerical analysis, statistics, and computer and information sciences which underpin the engineering discipline. (LO: 2I 3I)
- 1.3 In-depth understanding of specialist bodies of knowledge within the engineering discipline. (LO: 1N 2I 3N 4N 5N)
- 3.2 Effective oral and written communication in professional and lay domains. (LO: 6I)

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
1 - Online Quiz(zes) - 30%	•	•	•	•	•	
2 - Online Test - 30%	•	•	•	•		
3 - Project (applied) - 40%					•	•

### Alignment of Graduate Attributes to Learning Outcomes

Graduate Attributes	Learning Outcomes					
	1	2	3	4	5	6
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.