



ENEE14005 Capstone Power and Control Design

Term 1 - 2025

Profile information current as at 13/02/2025 12:38 pm

All details in this unit profile for ENEE14005 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

In this unit, you will work in a team to analyse and design electrical power and control systems by applying PSSE or equivalent industry software. You will also focus on renewables, promoting the United Nations Sustainable Development Goal 7: Affordable and Clean Energy. On satisfactory completion, you will be able to investigate solutions for contemporary engineering problems, plan and control project work in a team environment, research current practice in this discipline, execute evidence-based decision-making, check and evaluate the validity of information, and prepare professional documentation for a project.

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

Prerequisites: ENEE13021 Power System Analysis and Design AND ENEE13019 Control Systems Analysis and Design

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. **Online Test**

Weighting: 20%

2. **Online Test**

Weighting: 20%

3. **Portfolio**

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 [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 SUTE

Feedback

Students appreciated the unit coordinator's excellence in engaging them during lectures and even in recorded sessions.

Recommendation

This good practice should be continued.

Feedback from SUTE

Feedback

Students found that although the marking rubric was detailed, it did not align well with the project description.

Recommendation

The marking rubrics for the progress report, presentation, and final report should be reviewed to ensure they are fully aligned with the project description and clarify the unit requirements.

Feedback from Unit coordinator's reflection

Feedback

Students felt that the learning materials provided were insufficient to cover the knowledge and skills required for this unit.

Recommendation

The current learning resources and unit materials should be reviewed, and additional resources should be provided to enhance students' knowledge.

Unit Learning Outcomes

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

1. Perform advanced load flow, stability, and power quality calculations using commercial software
2. Tune power system controllers to obtain the desired performance
3. Design power transmission infrastructure and renewable generation and storage systems for a reliable power supply
4. Apply the Australian Standards, National Electricity rules and general principles of sustainable development
5. Present design outcomes professionally as a report, short conference paper and presentation
6. Communicate, work and learn, both individually and in teams, in a professional manner.

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

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

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

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

3.3 Creative, innovative, and proactive demeanor. (LO: 5I 6I)

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 3A 4A)

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

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

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

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

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

2.4 Application of systematic approaches to the conduct and management of engineering projects. (LO: 4A)

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

3.4 Professional use and management of information. (LO: 3A 4A)

3.5 Orderly management of self, and professional conduct. (LO: 4I 5I 6A)

3.6 Effective team membership and team leadership. (LO: 5A 6A)

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 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 Test - 20%	•					
2 - Online Test - 20%		•				
3 - Portfolio - 60%	•	•	•	•	•	•

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 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