In Progress

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

ENEM29002 *Fluid Power Engineering and Control*

Term 2 - 2024

Profile information current as at 21/05/2024 06:11 am

All details in this unit profile for ENEM29002 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 project-based unit is about designing fluid power systems for automated and semiautomated industrial plants. This unit deals with exploring fluid power elements and their ISO standard symbols, designing fluid power circuits using actuators, directional control, and other valves, sensors, and control systems. Control technology may include both hydraulic and pneumatic systems integrated with programmable controllers (PLCs and microcontrollers). In small teams, you will undertake project work involving solving real-life industrial problems. There are also several laboratory experiments in the areas of hydraulic and pneumatic operating system design and control circuit design integrated with PLCs for automated machines. You will use simulation software (SimScape and/or FluidSim) for confirming the functionality of designed projects prior to prototyping. You will communicate professionally using discipline-specific terminology to present designs and problem solutions. Students enrolled in online mode must attend a compulsory residential school to facilitate peer collaboration and attainment of the unit learning outcomes.

Details

Career Level: *Postgraduate*
Unit Level: *Level 9*
Credit Points: *12*
Student Contribution Band: *8*
Fraction of Full-Time Student Load: *0.25*

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

- Melbourne
- 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).

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 12-credit Postgraduate 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. **Written Assessment**
Weighting: 20%
2. **Written Assessment**
Weighting: 20%
3. **Laboratory/Practical**
Weighting: 20%
4. **Online Quiz(zes)**
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.

Unit Learning Outcomes

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

1. Design complex fluid drive systems and analyse their performance individually and in teams
2. Evaluate advanced applications of drive systems in industrial plants
3. Design fluid control circuits integrated with programmable controllers for automated machine systems
4. Design and analyse electro-mechanical, fluid power and energy conversion systems
5. Design protection and control systems for fluid power machines
6. Create professional documentation using appropriate engineering terminology and symbols related to electric and fluid drives.

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 Skills Base, 2. Engineering Application Ability and 3. Professional and Personal Attributes at the following levels:

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 7I)
1.3 In-depth understanding of specialist bodies of knowledge within the engineering discipline. (LO: 1I 2I 3I 5I 6I)
1.5 Knowledge of engineering design practice and contextual factors impacting the engineering discipline. (LO: 3I 6I)
2.2 Fluent application of engineering techniques, tools and resources. (LO: 1I 3I 4I 5I 6I)
2.3 Application of systematic engineering synthesis and design processes. (LO: 1I 3I 4I 5I)
3.1 Ethical conduct and professional accountability. (LO: 7I)
3.2 Effective oral and written communication in professional and lay domains. (LO: 6I 7I)
3.3 Creative, innovative and pro-active demeanour. (LO: 3I 4I 6I 7I)
3.6 Effective team membership and team leadership. (LO 1I 2I 4I 6I 7I)

Advanced

1.2 Conceptual understanding of the mathematics, numerical analysis, statistics, and computer and information sciences which underpin the engineering discipline. (LO: 1I 2A 3I 7I))
1.4 Discernment of knowledge development and research directions within the engineering discipline. (LO: 1I 2I 3I 5I 6A)
2.1 Application of established engineering methods to complex engineering problem solving. (LO: 1I 2I 3I 5A 6I)
2.4 Application of systematic approaches to the conduct and management of engineering projects. (LO: 1A 2A 3A 4I 5I 6I)
3.4 Professional use and management of information. (LO: 1A 2A 3A 4A 6I 7A)
3.5 Orderly management of self, and professional conduct. (LO: 1I 2I 3A 4I 6I 7A)

Note: LO refers to the Learning Outcome number(s) that link to the competency and the levels: N – Introductory, I – Intermediate and A – Advanced.

Refer to the Engineering Postgraduate Units 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=11382

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	6
1 - Written Assessment - 20%	•	•				
2 - Written Assessment - 20%			•	•	•	•
3 - Laboratory/Practical - 20%	•		•			•
4 - Online Quiz(zes) - 40%		•		•	•	

Alignment of Graduate Attributes to Learning Outcomes

Graduate Attributes	Learning Outcomes					
	1	2	3	4	5	6
1 - Knowledge	∘	∘			∘	
2 - Communication	∘					∘
3 - Cognitive, technical and creative skills		∘	∘	∘		∘
4 - Research					∘	
5 - Self-management						
6 - Ethical and Professional Responsibility			∘			
7 - Leadership						∘
8 - 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.