ENEM14016 *Fluid Machinery*

Term 1 - 2020

Profile information current as at 25/04/2024 07:18 pm

All details in this unit profile for ENEM14016 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.

Corrections

Unit Profile Correction added on 30-04-20

[redacted]will be replaced by an online quiz[redacted]held in the later part of the term[redacted]

[redacted]

[redacted]

General Information

Overview

This project-based unit will introduce you to fluid drive systems and the design and control of integrated drive systems for use in industries. It covers comparison of characteristics, construction, selection, design and operation of fluid drives and control systems; use of mathematical models to analyse performance; machine protection and control schemes; and evaluation of drive system performance. You will apply formulas and explain and record calculations. You will adopt professional approaches to work in teams and learn collaboratively to manage and complete projects. You will manage your own learning; investigate, design and check designed works performed; and communicate professionally using discipline language to present designs and problem solutions. Distance education students are required to have access to a computer, to make frequent use of the Internet, and are required to participate in Residential School activities.

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

Pre-requisites: (ENEM12006 Fluid Mechanics OR ENEM12001 Fluid Mechanics) and (ENEM12007 Statics and Dynamics OR ENEM12010 Engineering Dynamics).
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 - 2020

- 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 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. **Written Assessment**
Weighting: 20%
2. **Written Assessment**
Weighting: 20%
3. **Practical and Written Assessment**
Weighting: 20%
4. **In-class Test(s)**
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 Through Moodle site

Feedback
All aspects of the unit including weekly lectures, tutorials, workshops, laboratories were managed properly. The teaching environment helped student learning. This was a student favoured unit delivery.

Recommendation
Keep it up and improve.

Feedback from Through Moodle site

Feedback
Selection of two projects should be on different areas of the fluid power system.

Recommendation
Two fluid power projects will be crafted focusing on two different areas.

Feedback from Through Moodle site

Feedback
More SimScape demos.

Recommendation
In the next delivery, additional demos on SimScape simulations will be introduced. In 2019, five brief demos were provided on the fundamentals of SimScapes simulations.

Feedback from Through Moodle site

Feedback
Online quiz has an issue.

Recommendation
In 2020, a class test in place of online quiz will be introduced.

Unit Learning Outcomes

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

1. Use mathematical models to design and analyse drives and performance
2. Evaluate the charateristics of different drive systems with regard to application
3. Design protection and control systems
4. Analyse electro-mechanical power and energy conversion systems
5. Evaluate methods to improve energy efficiency, including the use of renewable energy sources
6. Create professional documentation using terminology, symbols and diagrams related to electric and fluid drives.

The learning outcomes are linked to Engineers Australia Stage 1 Competencies.

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 - Practical and Written Assessment - 20%			•			•
4 - In-class Test(s) - 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						

Alignment of Assessment Tasks to Graduate Attributes

Assessment Tasks	Graduate Attributes									
	1	2	3	4	5	6	7	8	9	10
1 - Written Assessment - 20%	•	•	•	•	•	•	•	•		
2 - Written Assessment - 20%	•	•	•	•	•	•	•	•		
3 - Practical and Written Assessment - 20%	•	•	•	•	•	•				
4 - In-class Test(s) - 40%	•	•	•	•						

Textbooks and Resources

Textbooks

ENEM14016

Prescribed

Fluid Power with Applications
Edition: 7th Ed (2014)
Authors: Anthony Esposito
Pearson
London , UK , UK
ISBN: 13:978-1-292-02387-8
Binding: Hardcover

Additional Textbook Information
Paper copies can be purchased from the CQUni Bookshop here: http://bookshop.cqu.edu.au (search on the Unit code)

View textbooks at the CQUniversity Bookshop

IT Resources

You will need access to the following IT resources:

- CQUniversity Student Email
- Internet
- Unit Website (Moodle)

Referencing Style

All submissions for this unit must use the referencing style: Harvard (author-date)
For further information, see the Assessment Tasks.

Teaching Contacts

Nirmal Mandal Unit Coordinator
n.mandal@cqu.edu.au

Schedule

Week 1 - 09 Mar 2020

Module/Topic	Chapter	Events and Submissions/Topic
Lecture: Introduction to Fluid Power Tute: Four tute problems will be solved Workshop: Project 1 scope of hydraulic power systems will be introduced. Team building activities will be finished.	Chapter 1~4 of Esposito	

Week 2 - 16 Mar 2020

Module/Topic	Chapter	Events and Submissions/Topic
Lecture: Hydraulic Pumps Tute: Four tute problems will be solved Workshop: For project 1, the progress of it will be monitored and recorded using meeting minutes, 4-square charts, agenda items, and weekly planning documents.	Chapter 5 of Esposito	

Week 3 - 23 Mar 2020

Module/Topic	Chapter	Events and Submissions/Topic
Lecture: Hydraulic motor Tute: Four tute problems will be solved Workshop: For project 1, the progress of it will be monitored and recorded using meeting minutes, 4-square charts, agenda items, and weekly planning documents.	Chapter 7 of Esposito	

Week 4 - 30 Mar 2020

Module/Topic	Chapter	Events and Submissions/Topic
Lecture: Hydraulic Accumulators and receivers Tute: Four tute problems will be solved Workshop: For project 1, the progress of it will be monitored and recorded using meeting minutes, 4-square charts, agenda items, and weekly planning documents.	Chapter 11 of Esposito	

Week 5 - 06 Apr 2020

Module/Topic	Chapter	Events and Submissions/Topic
Lecture: Hydraulic valves and controls Tute: Four tute problems will be solved Workshop: For project 1, the progress of it will be monitored and recorded using meeting minutes, 4-square charts, agenda items, and weekly planning documents.	Chapter 8, 16 of Esposito	

Vacation Week - 13 Apr 2020

Module/Topic	Chapter	Events and Submissions/Topic
no activities		

Week 6 - 20 Apr 2020

Module/Topic	Chapter	Events and Submissions/Topic
Lecture: Hydraulic Circuit Design and Analysis Tute: Four tute problems will be solved Workshop: Project 1 progress formal presentation in the workshop section and getting ready to submit the team project on Friday, Week 6 in the submission link set in Moodle.	Chapter 9 of Esposito	**Assignment 1** Due: Week 6 Friday (24 Apr 2020) 11:45 pm AEST

Week 7 - 27 Apr 2020

Module/Topic	Chapter	Events and Submissions/Topic
Lecture: Hydraulic Cylinders, Cushioning and shock absorbers Tute: Four tute problems will be solved Workshop: Project 2 scope of fluid power systems will be introduced. The same Team will be employed if it is ok.	Chapter 6 of Esposito	

Week 8 - 04 May 2020

Module/Topic	Chapter	Events and Submissions/Topic

Lecture: Hydraulic Conductors and fittings Tute: Four tute problems will be solved Workshop: For project 2, the progress of it will be monitored and recorded using meeting minutes, 4-square charts, agenda items, and weekly planning documents.	Chapter 10 of Esposito	

Week 9 - 11 May 2020

Module/Topic	Chapter	Events and Submissions/Topic
Lecture: Pneumatics: components - compressors, circuits, and applications Tute: Four tute problems will be solved Workshop: For project 2, the progress of it will be monitored and recorded using meeting minutes, 4-square charts, agenda items, and weekly planning documents. Class test: A class test on this unit will be held on Thursday from 11:00 am to 1:00 pm in the tute classroom. Residential School: the information of it is presented in the event and submission section of Week 9 activities.	Chapter 13, 14 of Esposito	The **residential school** will be held in week 9 at CQU Engineering campuses (CQU Rockhampton North Campus for example) for Thursday and Friday. The class test for distance students of this unit will be held during this period: Thursday, 11:00 am ~ 13:00 pm at the tutorial session venue of the CQU Engineering campus you are visiting. **Class Test** Due: Week 9 Thursday (14 May 2020) 11:00 am AEST

Week 10 - 18 May 2020

Module/Topic	Chapter	Events and Submissions/Topic
Lecture: Electrical Machines and controls Tute: Four tute problems will be solved Workshop: For project 2, the progress of it will be monitored and recorded using meeting minutes, 4-square charts, agenda items, and weekly planning documents. Lab activities: In Friday this week, the laboratory experiments will be carried out in the fluid lab of CQU campus.	Chapter 15, 17 of Esposito, CRO	

Week 11 - 25 May 2020

Module/Topic	Chapter	Events and Submissions/Topic
Lecture: Maintenance of Hydraulic Systems Tute: Four tute problems will be solved Workshop: For project 2, the progress of it will be monitored and recorded using meeting minutes, 4-square charts, agenda items, and weekly planning documents.	Chapter 12 of Esposito	

Week 12 - 01 Jun 2020

Module/Topic	Chapter	Events and Submissions/Topic
Lecture: Review of the unit Tute: no tute Workshop: Project 2 formal progress presentation in the workshop section and getting ready to submit the team project on Friday, Week 12 in the submission link set in Moodle.	Chapters covered	**Assignment 2** Due: Week 12 Friday (5 June 2020) 11:45 pm AEST

Review/Exam Week - 08 Jun 2020

Module/Topic	Chapter	Events and Submissions/Topic

Laboratory Team Report Due: Review/Exam Week Monday (8 June 2020) 11:45 pm AEST

Exam Week - 15 Jun 2020

Module/Topic	Chapter	Events and Submissions/Topic

Assessment Tasks

1 Assignment 1

Assessment Type
Written Assessment

Task Description
Assignment 1 is a team project. It focuses on the content of the unit covered in week 1 to week 6. The scope of Assignment 1 will be populated in the unit Moodle before term starts and will be discussed in the week 1 workshop session. It is a team submission. A team project presentation of this project will be held on Week 6 in Workshop time and venue.

Assessment Due Date
Week 6 Friday (24 Apr 2020) 11:45 pm AEST
Compulsory team submission

Return Date to Students
Week 8 Friday (8 May 2020)
After two weeks of submission date

Weighting
20%

Minimum mark or grade
50%

Assessment Criteria
This team-based project will be assessed considering both technical and professional aspects. The technical aspects cover a wide range of applications of design and analysis of a hydraulic system, comparison and safety checking of the new design using proper engineering procedures. The professional skills cover a higher level of teamwork, leadership, research and communication skills.
Students should refer to the Unit Moodle site for team project report assessment criteria and individual marking criteria of the team-based projects. A detailed description of both marking schemes will be provided in the Moodle site on time. It is
based on some factors such as Team Charter and/or peer assessments.

Referencing Style

- Harvard (author-date)

Submission
Online Group

Submission Instructions
Students can scan their handwritten calculations for online submission

Learning Outcomes Assessed

- Use mathematical models to design and analyse drives and performance
- Evaluate the charateristics of different drive systems with regard to application
- Analyse electro-mechanical power and energy conversion systems
- Evaluate methods to improve energy efficiency, including the use of renewable energy sources
- Create professional documentation using terminology, symbols and diagrams related to electric and fluid drives.

Graduate Attributes

- Communication
- Problem Solving
- Critical Thinking

- Information Literacy
- Team Work
- Information Technology Competence
- Cross Cultural Competence
- Ethical practice

2 Assignment 2

Assessment Type
Written Assessment

Task Description
Assignment 2 is a team project. It focuses on the content of the unit covered in week 1 to week 12. The scope of Assignment 2 will be populated in the unit Moodle in Week 7 and will be discussed in the week 7 workshop session. It is a team submission. A team project presentation of this project will be held on Week 12 in Workshop time and venue.

Assessment Due Date
Week 12 Friday (5 June 2020) 11:45 pm AEST
Compulsory team submission

Return Date to Students
Exam Week Friday (19 June 2020)
After two weeks of submission date

Weighting
20%

Minimum mark or grade
50%

Assessment Criteria
This team-based project will be assessed considering both technical and professional aspects. The technical aspects cover a wide range of applications of design and analysis of a fluid powered system, comparison and safety checking of the new design using proper engineering procedures. The professional skills cover a higher level of teamwork, leadership, research and communication skills.
Students should refer to the Unit Moodle site for team project report assessment criteria and individual marking criteria of the team-based projects. A detailed description of both marking schemes will be provided in the Moodle site on time. It is based on some factors such as Team Charter and/or peer assessments.

Referencing Style

- Harvard (author-date)

Submission
Online Group

Submission Instructions
Students can scan their handwritten calculations for online submission

Learning Outcomes Assessed

- Use mathematical models to design and analyse drives and performance
- Evaluate the charateristics of different drive systems with regard to application
- Analyse electro-mechanical power and energy conversion systems
- Evaluate methods to improve energy efficiency, including the use of renewable energy sources

Graduate Attributes

- Communication
- Problem Solving
- Critical Thinking
- Information Literacy
- Team Work
- Information Technology Competence
- Cross Cultural Competence
- Ethical practice

3 Laboratory Team Report

Assessment Type
Practical and Written Assessment

Task Description
It is based on the content covered in Hydraulic Test rig experiments. It is a team submission. For any change of date and time, the students will be notified before in the Moodle site. Pl. see the information in the Moodle site regularly.

Assessment Due Date
Review/Exam Week Monday (8 June 2020) 11:45 pm AEST
Compulsory Team submission

Return Date to Students
Exam Week Friday (19 June 2020)
After two weeks of submission date

Weighting
20%

Minimum mark or grade
50%

Assessment Criteria
Assessment criteria are based on detailed calculations and presentations of data obtained in the hydraulic test rig experiments. It is based on accuracy in calculations, validation of results obtained by a proper interpretation of results. It is also based on the way how students are putting symbols and hydraulic diagrams to present the sequence of operations in the experiments.
No team charter approach or any other marking schemes are considered for individual student marking. All students on a team will get the same marks as that of the team lab report. A detailed description of the marking scheme for lab report marking will be provided in the Moodle site on time.

Referencing Style

- Harvard (author-date)

Submission
Online Group

Submission Instructions
Students can scan their handwritten calculations for online submission

Learning Outcomes Assessed

- Design protection and control systems
- Create professional documentation using terminology, symbols and diagrams related to electric and fluid drives.

Graduate Attributes

- Communication
- Problem Solving
- Critical Thinking
- Information Literacy
- Team Work
- Information Technology Competence

4 Class Test

Assessment Type
In-class Test(s)

Task Description
This is an invigilated individual class test that will be held on Thursday in Week 9 of this unit. The duration will be 2 hours. For on-campus students, it will be in the Tute session of Week 9 on your campus from 11:00 am ~13:00 pm, the same venue as the tutorial sessions.
For distance students, If you go to a particular CQU Engineering campus for your lab, the class test date, time and venue will be the same as that of the on-campus students of that campus. For example, if you go to CQU Rockhampton Campus, test information is as follows: Thursday week 9, 11:00 am to 13:00 pm, 32/G17.

Assessment Due Date
Week 9 Thursday (14 May 2020) 11:00 am AEST
Compulsory attendance of class test. If there is any change of class test time, it will be communicated to the students well before. It is a two hours closed book test. An equation sheet will be attached to the test questions.

Return Date to Students
Week 11 Friday (29 May 2020)

After two weeks of the date of class test

Weighting
40%

Minimum mark or grade
50%

Assessment Criteria
Assessment criteria are based on detailed technical calculations and professional presentations of steps of calculations in a logical order using proper units and symbols. It is based on accuracy in step calculations and right answers, validation of results obtained by a proper interpretation of results.

Referencing Style

- Harvard (author-date)

Submission
No submission method provided.

Submission Instructions
Submit the answer scripts to the instructor at the end of the test. You cannot take it outside.

Learning Outcomes Assessed

- Design protection and control systems

Graduate Attributes

- Communication
- Problem Solving
- Critical Thinking
- Information Literacy

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