

## In Progress

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



# ENEX13003 *Design of Mechatronics Elements*

## Term 2 - 2024

Profile information current as at 19/05/2024 05:40 am

All details in this unit profile for ENEX13003 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 unit will introduce you to the basics of mechatronics and machine design, including the design process, engineering mechanics and materials, failure prevention, and characteristics of the principal elements. You will develop an understanding of standard drawings in the communication and definition of parts and assemblies in accordance with Australian Standards. In this unit, you will also learn and apply Autodesk Inventor software or equivalent for drafting and design activities.

### 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: ENEG11005: Fundamentals of Professional Engineering, ENEG11008: Materials for Engineers, and ENEM12009: Structural Mechanics

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

- Mackay
- Online

### 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

#### 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 Unit and Teaching Evaluation & personal communications

**Feedback**

Students praised that the unit contents were very practical and closely related to their potential job requirements.

**Recommendation**

The unit coordinator should further endeavour to identify practical skills and knowledge required from the industry and include these identified aspects in the unit for continued improvements.

#### Feedback from Student Unit and Teaching Evaluation

**Feedback**

Students liked the resourceful content and hands-on tutorial activities for nourishing skills in 3D modeling and simulations.

**Recommendation**

More case studies will be introduced in the lectures and more hands-on step-by-step tutorial activities will be provided to enhance students' learning experience.

#### Feedback from Student Unit and Teaching Evaluation & personal communications

**Feedback**

Students who did not take ENEM12009 felt disadvantaged.

**Recommendation**

ENEM12009 should be added as a prerequisite unit.

#### Feedback from Student Unit and Teaching Evaluation & personal communications

**Feedback**

Some of the students pointed out that some of the assessment tasks and expectations were not clear.

**Recommendation**

Assessment items should be reviewed and revised to clarify tasks and expectations. Furthermore, each assessment item should have a marking rubric.

## Unit Learning Outcomes

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

1. Interpret technical drawings to ensure effective communication and minimum manufacturing error
2. Use common Computer-Aided Design (CAD) software to create a range of engineering components and their production drawings complying with Australian Standards
3. Apply analytical and numerical approaches to perform load, stress, and deflection analysis under static and variable loadings
4. Identify suitable machine and mechatronics elements from manufacturers' catalogues
5. Develop reporting skills to present design concepts effectively and professionally using suitable engineering terminology, symbols, and diagrams that conform to Australian Standards.

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

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

3.3 Creative, innovative and pro-active demeanour. (LO: 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: 1A )

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

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

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

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

1.6 Understanding of the scope, principles, norms, accountabilities and bounds of sustainable engineering practice in the specific discipline. (LO: 1I 2A 3I 4A 5I )

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

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

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

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

3.4 Professional use and management of information. (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



### Alignment of Assessment Tasks to Learning Outcomes

Assessment Tasks	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.