In Progress

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

ENEM13018 *Materials and Manufacturing*

Term 2 - 2022

Profile information current as at 26/05/2022 10:11 pm

All details in this unit profile for ENEM13018 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 offers extended information on material behaviours and manufacturing properties, principles of manufacturing processes and technologies. The unit aims to deepen the understanding of the material selection process and enables you to identify appropriate manufacturing processes for a particular product design and development. You will study a wide variety of manufacturing processes such as bulk deformation processes, material removal processes, finishing and joining processes, micro/nano scale manufacturing, and other modern manufacturing techniques and learn product design, quality management, and manufacturing in a competitive environment. You will apply information literacy skills to obtain relevant engineering information and identify appropriate standards and practices.

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: (ENEG11008 Materials for Engineers or ENEG12005 Materials Science & Engineering) and MATH11218 Applied Mathematics or MATH11219 Engineering Mathematics.
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 - 2022

- 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 Optional 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 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. **Written Assessment**
Weighting: 20%
2. **Written Assessment**
Weighting: 20%
3. **Written Assessment**
Weighting: 20%
4. **Online Test**
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 Have your say source; UC and Lecturer

Feedback

Major manufacturing processes would be good to learn in more depth.

Recommendation

On top of in-class learning, planned manufacturing industry visit, starting from Term 2, 2021, for students of all campuses will help students to learn a wider spectrum of machine manufacturing practices.

Feedback from Have your say

Feedback

Feedback was informative but could be improved

Recommendation

Keep providing comprehensive written feedback in the assignment document indicating the errors and mistakes, amendments and sources where this can be learned more.

Feedback from Have your say source

Feedback

More concise lecture and more videos on processes.

Recommendation

Provide industry-based short videos. 1 hr lecture, 1 hr tutorial, and 1 hr drop-in session.

Unit Learning Outcomes

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

1. Establish the relationships between the microstructures of materials and their mechanical and manufacturing properties
2. Explain various bulk deformation and material removal processes as applicable to ductile and brittle materials and the machine tools that are used to carry out these operations
3. Calculate the forces, torques and power requirements for various processing of different materials for bulk deformation
4. Analyse the mechanics of metal cutting and the control of various process parameters to achieve optimum material removal and machining economics
5. Apply the knowledge of engineering metrology, instrumentation and quality assurance of manufacturing of products
6. Apply information literacy skills, obtain relevant engineering information and identify appropriate standards and practices
7. Work, learn and communicate in an ethical, professional manner, both individually and in teams.

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 1.2 Conceptual understanding of the mathematics, numerical analysis, statistics, and computer and information sciences which underpin the engineering discipline. (LO: 2I 3I 4I) 1.4 Discernment of knowledge development and research directions within the engineering discipline. (LO: 2I 3I 4I 5N) 1.6 Understanding of the scope, principles, norms, accountabilities and bounds of sustainable engineering practice in the specific discipline. (LO: 1I 2I 3I 4I 5I 6I 7I) 2.3 Application of systematic engineering synthesis and design processes. (LO: 2I 5I) 2.4 Application of systematic approaches to the conduct and management of engineering projects. (LO: 3I 4I 6I 7I) 3.1 Ethical conduct and professional accountability. (LO: 5I 6I 7I) 3.3 Creative, innovative and pro-active demeanour. (LO: 2I 3I 4I 5I 6I) 3.5 Orderly management of self, and professional conduct. (LO: 3I 4I 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: 1N 2A 3I 4I) 1.3 In-depth understanding of specialist bodies of knowledge within the engineering discipline. (LO: 1I 2A 3A 4I 5N) 1.5 Knowledge of engineering design practice and contextual factors impacting the engineering discipline. (LO: 2A 3A 4A 5N 6I) 2.1 Application of established engineering methods to complex engineering problem solving. (LO: 2I 3A 4I 5N) 2.2 Fluent application of engineering techniques, tools and resources. (LO: 2A 3I 4I 6I) 3.2 Effective oral and written communication in professional and lay domains. (LO: 1N 2I 3I 4I 5I 6A 7A) 3.4 Professional use and management of information. (LO: 2N 3A 4A 6N 7N)

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**](https://moodle.cqu.edu.au/course/view.php?id=1511)

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	7
1 - Written Assessment - 20%		•	•	•	•	•	
2 - Written Assessment - 20%	•	•		•		•	
3 - Written Assessment - 20%							•
4 - Online Test - 40%	•	•	•	•	•		•

Alignment of Graduate Attributes to Learning Outcomes

Graduate Attributes	Learning Outcomes						
	1	2	3	4	5	6	7
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

Textbooks

ENEM13018

Prescribed

Manufacturing Engineering and Technology
Edition: 7 (2014)
Authors: Serope Kalpakjian, Steven Schmid
Pearson Higher Ed
Binding: Paperback
ENEM13018

Supplementary

Materials and Processes in Manufacturing
Authors: E. Paul DeGarmo, J. T. Black, R. A. Kosher
Wiley
Binding: Paperback

Additional Textbook Information
Both of the textbooks are available online via CQU Library Search tool. Link https://www.cqu.edu.au/student-life/library

View textbooks at the CQUniversity Bookshop

IT Resources

You will need access to the following IT resources:

Academic Integrity Statement

Information for Academic Integrity Statement has not been released yet.
This unit profile has not yet been finalised.