MATH11247 *Foundation Mathematics*
Term 1 - 2023

Profile information current as at 27/04/2024 02:35 pm

All details in this unit profile for MATH11247 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

Foundation Mathematics is designed to provide you with foundation concepts, rules and methods of elementary mathematics. The main aim of this unit is to provide the foundations of mathematics, which are necessary to develop a unified body of knowledge. You will learn algebraic fundamentals and equation solving. Exponents and logarithms will be introduced together with linear systems, quadratic functions and graphs. You will also study introductory trigonometry, geometry and ratios. You will use mathematics foundation concepts to solve problems.

Details

Career Level: *Undergraduate*
Unit Level: *Level 1*
Credit Points: *6*
Student Contribution Band: *7*
Fraction of Full-Time Student Load: *0.125*

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 1 - 2023

- Bundaberg
- Cairns
- Gladstone
- Mackay
- 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).

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: Pass/Fail
2. **Portfolio**
Weighting: Pass/Fail
3. **Examination**
Weighting: Pass/Fail

Assessment Grading

This is a pass/fail (non-graded) unit. To pass the unit, you must pass all of the individual assessment tasks shown in the table above.

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 2022 Engineering Curriculum Review

Feedback

For consistency across first year engineering mathematics units, the final examination will changed to restricted open book.

Recommendation

Update the final examination to restricted format with students permitted to take in their workbooks developed during the term.

Feedback from Unit Coordinator's observation

Feedback

Students who consistently followed the weekly activities progressed well.

Recommendation

Continue to offer a positive, supported learning experience.

Unit Learning Outcomes

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

1. Apply number and algebra concepts to solve problems
2. Analyse and solve problems using trigonometry
3. Develop solutions to problems through the application of area and volume equations
4. Formulate and apply mathematical functions and graphs in solving equations
5. Select appropriate mathematical methods, use them to investigate and solve problems, and interpret the results
6. Use mathematics as a language to communicate results, concepts and ideas in context
7. Document the solutions to problems in a way that demonstrates a clear, logical and precise approach.

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:

Introductory

1.2 Conceptual understanding of the mathematics, numerical analysis, statistics, and computer and information sciences which underpin the engineering discipline. (LO: 1N 2N 3N 4N 5N 6N 7N)

2.1 Application of established engineering methods to complex engineering problem solving. (LO: 1N 2N 3N 4N 5N)

2.2 Fluent application of engineering techniques, tools and resources. (LO: 1N 2N 3N 4N 5N)

3.2 Effective oral and written communication in professional and lay domains. (LO: 6N 7N)

3.3 Creative, innovative and pro-active demeanour. (LO: 1N 2N 3N 4N 5N)

3.4 Professional use and management of information. (LO: 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

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 - 0%	●	●	●	●	●		
2 - Portfolio - 0%						●	●
3 - Examination - 0%	●	●	●	●	●	●	●

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
MATH11247

Prescribed

Engineering Mathematics
Ninth Edition (2021)
Authors: John Bird
Routledge
New York , New York , USA
ISBN: 978-0-367-64378-2
Binding: Paperback

Additional Textbook Information
This book can be accessed online at the CQUni Library website. If you prefer your own copy, you can purchase either version at 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)
- Access to a document scanner and/or pdf converter (all assessment submitted electronically as pdf file)
- Access to a printer (for printing assessment and tutorial materials)
- Access to a webcam, speakers and microphone or a headset (for participating in Zoom lectures and tutorials)

Referencing Style

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

Teaching Contacts

Roland Dodd Unit Coordinator
r.dodd@cqu.edu.au

Schedule

Week 1 - 06 Mar 2023		
Module/Topic	**Chapter**	**Events and Submissions/Topic**
Textbook Sections 1.1 to 1.4 and 2.1 to 2.3	Chapter 1: Revision of fractions, decimals and percentages; and Chapter 2: Indices, engineering notation and metric conversions	Textbook Practice Exercises 1 to 9 and Week 1 Tutorial Exercises
Week 2 - 13 Mar 2023		
Module/Topic	**Chapter**	**Events and Submissions/Topic**
Textbook Sections 5.1 to 5.5 and 6.1 to 6.3	Chapter 5: Algebra; and Chapter 6: Further algebra	Textbook Practice Exercises 27 to 36 and Week 2 Tutorial Exercises
Week 3 - 20 Mar 2023		
Module/Topic	**Chapter**	**Events and Submissions/Topic**

| Textbook Sections 7.1 to 7.4 and 8.1 to 8.5 | Chapter 7: Partial fractions; and Chapter 8: Solving simple equations | Textbook Practice Exercises 37 to 44 and Week 3 Tutorial Exercises |

Week 4 - 27 Mar 2023

Module/Topic	Chapter	Events and Submissions/Topic
Textbook Sections 9.1 to 9.4 and 10.1 to 10.5	Chapter 9: Transposition of formulae; and Chapter 10: Solving simultaneous equations	Textbook Practice Exercises 45 to 53 and Week 4 Tutorial Exercises

Week 5 - 03 Apr 2023

Module/Topic	Chapter	Events and Submissions/Topic
Textbook Sections 11.1 to 11.6 and 12.1 to 12.6	Chapter 11: Solving quadratic equations; and Chapter 12: Inequalities	Textbook Practice Exercises 54 to 65 and Week 5 Tutorial Exercises

Vacation Week - 10 Apr 2023

Module/Topic	Chapter	Events and Submissions/Topic

Week 6 - 17 Apr 2023

Module/Topic	Chapter	Events and Submissions/Topic
Textbook Sections 13.1 to 13.4 and 14.1 to 14.5	Chapter 13: Logarithms; and Chapter 14: Exponential functions	Textbook Practice Exercises 66 to 75 and Week 6 Tutorial Exercises

Week 7 - 24 Apr 2023

Module/Topic	Chapter	Events and Submissions/Topic
Textbook Sections 23.1 to 23.7 and 24.1 to 24.6	Chapter 23: Areas of common shapes; and Chapter 24: The circle and its properties	Textbook Practice Exercises 118 to 127 and Week 7 Tutorial Exercises

Week 8 - 01 May 2023

Module/Topic	Chapter	Events and Submissions/Topic
Textbook Sections 25.1 to 25.8 and 26.1 to 26.3	Chapter 25: Volumes and surface areas of common solids; and Chapter 26: Irregular areas and volumes and mean values of waveforms	Textbook Practice Exercises 128 to 138 and Week 8 Tutorial Exercises

Week 9 - 08 May 2023

Module/Topic	Chapter	Events and Submissions/Topic
Textbook Sections 17.1 to 17.8 and 18.1 to 18.6	Chapter 17: Introduction to trigonometry; and Chapter 18: Trigonometric waveforms	Textbook Practice Exercises 87 to 97 and Week 9 Tutorial Exercises

Week 10 - 15 May 2023

Module/Topic	Chapter	Events and Submissions/Topic
Textbook Sections 20.1 to 20.6 and 21.1 to 21.7	Chapter 20: Triangles and some practical applications; and Chapter 21: Trigonometric identities and equations	Textbook Practice Exercises 101 to 111 and Week 10 Tutorial Exercises

Week 11 - 22 May 2023

Module/Topic	Chapter	Events and Submissions/Topic
Textbook Sections 27.1 to 27.3 and 30.1 to 30.4	Chapter 27: Straight line equations; and Chapter 30: Graphical solution of equations	Textbook Practice Exercises 139 to 141, 149 to 153 and Week 11 Tutorial Exercises

Week 12 - 29 May 2023

Module/Topic	Chapter	Events and Submissions/Topic

| Textbook Sections 31.1 to 31.6 | Chapter 31: Functions and their curves | Textbook Practice Exercises 154 to 157 and Week 12 Tutorial Exercises |

Review/Exam Week - 05 Jun 2023

| Module/Topic | Chapter | Events and Submissions/Topic |

Exam Week - 12 Jun 2023

| Module/Topic | Chapter | Events and Submissions/Topic |

Term Specific Information

Unit Coordinator: Dr Roland Dodd
email: r.dodd@cqu.edu.au
Telephone (Office): (07) 4923 2877
Office: CQUniversity, North Rockhampton Campus, Building 30, First Floor, Room 1.18.
If you have any individual queries, please do not hesitate to email me and I will get back to you within two business days.

Assessment Tasks

1 Weekly Competency Tests

Assessment Type
Written Assessment

Task Description
Students will progress through a series of weekly Competency Tests linked to the textbook, Engineering Mathematics. Upon completion of the prescribed weekly course work, students are required to complete the corresponding Competency Test. The test is then submitted for marking and feedback. A result of 80% or more is required for each Competency Test. If a result of less than 80% occurs on a submission, students are required to review the course work and then complete, and pass, an additional Competency Test.

Assessment Due Date

The competency test will be due by Thursday 5:00PM AEST in the week following the associated prescribed course work. Due dates will be as advised on the MATH11247 Moodle site.

Return Date to Students

It is envisaged that feedback and solutions will be available within two weeks, or as soon as the marking process is completed.

Weighting
Pass/Fail

Minimum mark or grade
Students are required to score at least 80% of the available marks on the weekly competency test to Pass the weekly competency test. Students need to receive a Pass for each weekly competency test to be eligible for a Pass grade in the unit.

Assessment Criteria
Questions are from course content covered in the week associated with the competency test. Solutions are awarded full marks if they are error-free, partial marks if there are some errors, and no marks if not attempted or contain so many errors as to render the attempt to be without value.
Solutions to all questions should be neatly and clearly presented. Full working is required to obtain maximum credit for solutions.

Referencing Style

- Harvard (author-date)

Submission
Online

Submission Instructions
The Competency Test is uploaded as a single PDF document at the MATH11247 unit Moodle site. Full details are provided on the unit Moodle site.

Learning Outcomes Assessed

- Apply number and algebra concepts to solve problems
- Analyse and solve problems using trigonometry
- Develop solutions to problems through the application of area and volume equations
- Formulate and apply mathematical functions and graphs in solving equations
- Select appropriate mathematical methods, use them to investigate and solve problems, and interpret the results

2 Portfolio

Assessment Type
Portfolio

Task Description
Students will develop and submit a portfolio. This task aims to reward all students in the unit for their continuing efforts in the unit and their focus on progressing the prescribed weekly course work.
The portfolio submission is the workbook of solutions that the student personally develops for the prescribed weekly course work. This task is split into three components; Workbook (Part 1), Workbook (Part 2) and Workbook (Part 3). Students submit their personally developed solutions to the questions from the practice exercises relating to the unit textbook. Completion of these exercises is prescribed as the minimal weekly level of required effort to grasp the essentials of MATH11247 Foundation Mathematics.
The workbooks will capture and formalise the portfolio of work that students are engaged with as they progress through the unit. Students will develop this resource progressively during the term. At the end of term students are permitted to take these workbooks into the examination.
Each workbook, contributing to the portfolio, will be graded as either Pass or Fail. If a Fail is awarded, students are given the opportunity to review their feedback and then submit a revised workbook submission that addresses the feedback.

Assessment Due Date

Due dates will be as advised on the MATH11247 Moodle site.

Return Date to Students

It is envisaged that feedback will be available within two weeks, or as soon as the marking process is completed.

Weighting
Pass/Fail

Minimum mark or grade
Students need to receive a Pass for each workbook submission in the portfolio to be eligible for a Pass grade in the unit.

Assessment Criteria
The portfolio consists of a series of workbooks. Each workbook is to contain:
1) numbered pages;
2) student signature on each page of the workbook of solutions;
3) solutions, personally developed by the student, to each problem in the prescribed weekly course work;
4) each solution identified by its associated practice exercise and question number;
5) a workbook index linking the developed solutions with the prescribed weekly course work; and
6) a university standard of presentation.

Referencing Style

- Harvard (author-date)

Submission
Online

Submission Instructions
Each workbook is uploaded as a single PDF document at the MATH11247 unit Moodle site. Full details are provided on the unit Moodle site.

Learning Outcomes Assessed

- Use mathematics as a language to communicate results, concepts and ideas in context
- Document the solutions to problems in a way that demonstrates a clear, logical and precise approach.

Examination

Outline
Complete an invigilated examination.

Date
During the examination period at a CQUniversity examination centre.

Weighting
0%

Length
180 minutes

Minimum mark or grade
Students must score a minimum of 50% of the marks available on the final examination.

Exam Conditions
Restricted.

Materials
Dictionary - non-electronic, concise, direct translation only (dictionary must not contain any notes or comments).
Calculator - all non-communicable calculators, including scientific, programmable and graphics calculators are authorised

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