MATH11218 *Applied Mathematics*
Term 2 - 2025

Profile information current as at 12/11/2026 10:59 am

All details in this unit profile for MATH11218 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

In this unit, you will study fundamental mathematical concepts, processes, and techniques necessary to support subsequent studies in applied calculus. Throughout the term, you will record handwritten worked examples of all problems attempted in a workbook to create a comprehensive resource for solving mathematical problems, which you can apply in the exam and throughout your course and career. You will investigate the properties and applications of linear, quadratic, logarithmic, and exponential functions. You will use trigonometry to solve triangles and determine solutions to problems involving algebraic techniques. Complex numbers, vectors, and matrix algebra will be used to develop solutions to problems. Other important elements of this unit are communicating results, concepts, and ideas using mathematics as a language. This unit will develop your software skills in WolframAlpha to visualise, analyse, validate and 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

Anti-requisite: MATH12223 or MATH12224.
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 - 2025

- 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. Handwritten Workbook (Written Assessment)
Weighting: Pass/Fail
2. Competency tests (Online Quiz(zes))
Weighting: Pass/Fail
3. Examination (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
- Academic Progression Policy and Procedure
- Student Refund and Credit Balance Policy and Procedure
- 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 evaluation

Feedback
Some students commented that workload requirements for this unit were difficult and excessive, while others said that there was no new content for them.

Recommendation
Unit content should be reviewed.

Feedback from Student evaluation

Feedback
Students were happy with the unit organisation and delivery.

Recommendation
The unit organisation and delivery structure should be continued.

Unit Learning Outcomes

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

1. Determine solutions to problems involving algebraic techniques and vectors
2. Solve problems by applying the properties of linear, quadratic, logarithmic, and exponential functions
3. Model periodic phenomena using trigonometric functions
4. Solve geometric and engineering problems using complex numbers
5. Represent and solve problems using matrices and matrix operators
6. Communicate results, concepts, and ideas in context using mathematics as a language
7. Apply mathematical software to visualise, analyse, validate and solve problems.

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 7N)

2.2 Fluent application of engineering techniques, tools, and resources. (LO: 1N 2N 3N 4N 5N 7N)

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

3.3 Creative, innovative, and proactive demeanor. (LO: 1N 2N 3N 4N 5N)

3.4 Professional use and management of information. (LO: 6N)

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 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 - Online Quiz(zes) - 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

MATH11218

Prescribed

Engineering Mathematics
5th edition (2017)
Authors: Croft, Davison, Flint & Hargeaves
Pearson
Harlow , Essex , UK
ISBN: 9781292146652
Binding: Paperback

View textbooks at the University shop

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, speaker 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

Kali Nepal Unit Coordinator
k.nepal@cqu.edu.au

Schedule

Week 1 Review of algebraic techniques (I) - 14 Jul 2025

Module/Topic	Chapter	Events and Submissions/Topic
Textbook Sections 1.1, 1.2,1.4 to 1.5	Chapter 1: Review of algebraic techniques	Textbook Exercises 1.2, 1.4 to 1.5 and Week 1 Tutorial Exercises

Week 2 Review of algebraic techniques (II) - 21 Jul 2025

Module/Topic	Chapter	Events and Submissions/Topic
Textbook Sections 1.6 to 1.8	Chapter 1: Review of algebraic techniques	Textbook Exercises 1.6 to 1.8 and Week 2 Tutorial Exercises

Week 3 Coordinate systems and vectors - 28 Jul 2025

Module/Topic	Chapter	Events and Submissions/Topic
Textbook Sections 4.1 to 4.4, 7.1 to 7.7	Chapter 4: Coordinate systems, and Chapter 7: Vectors	Textbook Exercises 4.2 to 4.4, 7.2, 7.3, 7.5 to 7.7 and Week 3 Tutorial Exercises Assessment 2a: Competency Test 1 due Assessment 1: Handwritten Workbook preparation I

Week 4 Engineering functions (I) - 04 Aug 2025		
Module/Topic	Chapter	Events and Submissions/Topic
Textbook Sections 2.1 to 2.3, 2.4.1, 2.4.2, 2.4.6 to 2.4.9	Chapter 2: Engineering functions	Textbook Exercises 2.3, 2.4.1, 2.4.2, 2.4.6, 2.4.8, 2.4.9 and Week 4 Tutorial Exercises
Week 5 Engineering functions (II) - 11 Aug 2025		
Module/Topic	Chapter	Events and Submissions/Topic
Textbook Sections 2.4.3 to 2.4.5	Chapter 2: Engineering functions	Textbook Exercises 2.4.3, 2.4.4, 2.4.5 and Week 5 Tutorial Exercises
Vacation Week - 18 Aug 2025		
Module/Topic	Chapter	Events and Submissions/Topic
Week 6 The trigonometric functions (I) - 25 Aug 2025		
Module/Topic	Chapter	Events and Submissions/Topic
Textbook Sections 3.1 to 3.6	Chapter 3: The trigonometric functions	Textbook Exercises 3.3, 3.4, 3.6 and Week 6 Tutorial Exercises
Week 7 The trigonometric functions (II) - 01 Sep 2025		
Module/Topic	Chapter	Events and Submissions/Topic
Textbook Sections 3.7 to 3.8	Chapter 3: The trigonometric functions	Textbook Exercises 3.7 to 3.8 and Week 7 Tutorial Exercises Assessment 2b: Competency Test 2 due Assessment 1: Handwritten Workbook preparation II
Week 8 Complex numbers (I) - 08 Sep 2025		
Module/Topic	Chapter	Events and Submissions/Topic
Textbook Sections 9.1 to 9.8	Chapter 9: Complex numbers	Textbook Exercises 9.2 to 9.5, 9.7 and Week 8 Tutorial Exercises
Week 9 Complex numbers (II) - 15 Sep 2025		
Module/Topic	Chapter	Events and Submissions/Topic
Textbook Sections 9.9 to 9.10	Chapter 9: Complex numbers	Textbook Exercises 9.9 to 9.10 and Week 9 Tutorial Exercises
Week 10 Matrix algebra (I) - 22 Sep 2025		
Module/Topic	Chapter	Events and Submissions/Topic
Textbook Sections 8.1 to 8.8	Chapter 8: Matrix algebra	Textbook Exercises 8.3, 8.5, 8.6, 8.7, 8.8 and Week 10 Tutorial Exercises
Week 11 Matrix algebra (II) - 29 Sep 2025		
Module/Topic	Chapter	Events and Submissions/Topic
Textbook Sections 8.9 to 8.13	Chapter 8: Matrix algebra	Textbook Exercises 8.9 to 8.11, 8.13 and Week 11 Tutorial Exercises Assessment 2c: Competency Test 3 due Assessment 1: Handwritten Workbook preparation III
Week 12 - 06 Oct 2025		
Module/Topic	Chapter	Events and Submissions/Topic
Revision		Revision and Week 12 Tutorial Exercises Handwritten Workbook Due: Week 12 Wednesday (8 Oct 2025) 11:59 pm AEST
Review/Exam Week - 13 Oct 2025		
Module/Topic	Chapter	Events and Submissions/Topic
Exam Week - 20 Oct 2025		
Module/Topic	Chapter	Events and Submissions/Topic

Standard examination

Assessment Tasks

1 Written Assessment

Assessment Title
Handwritten Workbook

Task Description
This is an individual assessment. It must only be handwritten and scanned copy uploaded for checking after completing, revising and updating three competency tests (Week 3, Week 7 and Week 11) and submit in Week 12.
Students need to (i) handwrite the solutions to three competency tests, (ii) revise and update after receiving the solutions, (iii) sequentially organise and (iv) submit solutions of all (both originally correct and revised solutions) of thirty (30) extended response mathematical questions as a single scanned PDF copy of the workbook.
Students are only permitted to bring this one physical workbook into the exam.
Students are reminded that all aspects of work submitted are to be the efforts of their own personal studies.
Please see the unit Moodle site for the questions in this assessment, together with complete instructions for online submission of your solutions.
Marks will be deducted for assessments that are submitted late without an extension request.
Assessments will receive NO marks if submitted after the solutions have been released.
AI ASSESSMENT SCALE - NO AI
You must not use AI at any point during the assessment. You must demonstrate your core skills and knowledge.

Assessment Due Date
Week 12 Wednesday (8 Oct 2025) 11:59 pm AEST

Return Date to Students
Review/Exam Week Friday (17 Oct 2025)

Weighting
Pass/Fail

Minimum mark or grade
25%

Assessment Criteria
The assessment mark is based on Pass/Fail system. Questions 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.
Answers to all questions should be neatly and clearly presented and full working is required to obtain maximum credit for solutions.
The Unit Coordinator may offer students a reattempt for this assessment.

Referencing Style
Harvard (author-date)

Submission
Online

Submission Instructions
Assignment is uploaded as a single PDF document to the unit Moodle site for MATH11218. Full details are provided on the unit Moodle site.

Learning Outcomes Assessed
- Determine solutions to problems involving algebraic techniques and vectors
- Solve problems by applying the properties of linear, quadratic, logarithmic, and exponential functions
- Model periodic phenomena using trigonometric functions
- Solve geometric and engineering problems using complex numbers
- Represent and solve problems using matrices and matrix operators
- Communicate results, concepts, and ideas in context using mathematics as a language
- Apply mathematical software to visualise, analyse, validate and solve problems.

2 Online Quiz(zes)

Assessment Title
Competency tests

Task Description
Students need to complete three (3) competency tests at the end of Week 3, Week 7 and Week 11. All solutions must be handwritten and scanned copies of the sequentially organised solutions are submitted in a single PDF file together with online answers in Moodle.
Students are reminded that all aspects of work submitted are to be the efforts of their own personal studies.
Please see the unit Moodle site for the questions for the competency tests. Test questions will be available under the "Assessment" tile on the unit Moodle website, together with complete instructions for online submission of your solutions to the test questions.
Test questions will be automatically closed and automatically submitted by the specified date and time. Students cannot apply for extension after the test questions are closed.

AI ASSESSMENT SCALE - NO AI
You must not use AI at any point during the assessment. You must demonstrate your core skills and knowledge.

This assessment is exempted from the 72-hour submission grace period and must be completed by the stated submission date/time.

Number of Quizzes
3

Frequency of Quizzes
Other

Assessment Due Date
Due date and time for each competency test will be set in unit Moodle site.

Return Date to Students
Within two weeks of the due date of each competency test.

Weighting
Pass/Fail

Minimum mark or grade
25% overall

Assessment Criteria
The competency test mark is based on Pass/Fail system. Questions 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.
Answers to all questions should be neatly and clearly presented and full working is required to obtain maximum credit for solutions.
The Unit Coordinator may offer students a reattempt for this assessment.

Referencing Style
Harvard (author-date)

Submission
Online

Submission Instructions
Detailed instructions for preparing solutions and online submissions will be available in Moodle Site.

Learning Outcomes Assessed
- Determine solutions to problems involving algebraic techniques and vectors
- Solve problems by applying the properties of linear, quadratic, logarithmic, and exponential functions
- Model periodic phenomena using trigonometric functions
- Solve geometric and engineering problems using complex numbers

Examination

Outline
Complete an invigilated examination.

Date
During the examination period at a CQUniversity examination centre.

Weighting
Pass/Fail

Length
180 minutes

Minimum mark or grade
50%

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