



MATH11160 *Technology Mathematics*

Term 3 - 2020

Profile information current as at 05/05/2024 08:54 pm

All details in this unit profile for MATH11160 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 apply essential mathematical concepts, processes, and techniques to support the development of mathematical descriptions and models for problems in science and engineering domains. You will investigate and apply the properties of linear, quadratic, exponential, and logarithmic functions in appropriate settings, use trigonometric functions to solve relevant problems and describe periodic phenomena. You will also learn and apply principles of applied calculus for describing and solving engineering problems. Other important elements of this unit are the effective communication of results, concepts, and ideas using mathematics as a language in a way that demonstrates a clear, logical, and precise approach.

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-requisites: MATH11218, MATH11246 Pre-requisite: MATH11247

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 3 - 2020

- 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

1. **Online Quiz(zes)**

Weighting: 20%

2. **Written Assessment**

Weighting: 20%

3. **Written Assessment**

Weighting: 20%

4. **Take Home Exam**

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 Engineering Course Committee

Feedback

Add vectors, complex numbers, solving systems of linear equations, and more calculus to MATH11160.

Recommendation

Will gradually add these topics in the redeveloped MATH11160 from Term 2 of 2020.

Feedback from Student feedback from the unit evaluation

Feedback

Positive student feedback was received on the assessment; Moodle site layout and available resources; lecturing style and examples presented, and the level of support offered by staff.

Recommendation

Continue to foster the current learning and teaching environment

Unit Learning Outcomes

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

1. Demonstrate foundation mathematics skills with emphasis on application to engineering disciplines
2. Formulate and analyse simple mathematical models
3. Apply theory to practical problems drawn from a range of engineering disciplines
4. Solve engineering related problems using foundation mathematics and introductory calculus techniques.

Alignment of Learning Outcomes, Assessment and Graduate Attributes



Alignment of Assessment Tasks to Learning Outcomes

Assessment Tasks	Learning Outcomes			
	1	2	3	4
1 - Online Quiz(zes) - 20%	•	•		
2 - Written Assessment - 20%			•	•
3 - Written Assessment - 20%			•	•
4 - Take Home Exam - 40%	•	•		

Alignment of Graduate Attributes to Learning Outcomes

Graduate Attributes	Learning Outcomes			
	1	2	3	4
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 - Online Quiz(zes) - 20%		•	•	•				•		
2 - Written Assessment - 20%	•	•	•	•				•		
3 - Written Assessment - 20%	•	•	•	•				•		
4 - Take Home Exam - 40%	•	•	•	•				•		

Textbooks and Resources

Textbooks

MATH11160

Prescribed

Essentials and Examples of Applied Mathematics

Edition: 1st edn (2018)

Authors: Guo, WW

Pearson Australia

Melbourne , VIC , Australia

ISBN: 9781488623820

Binding: Paperback

[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

Nadine Adams Unit Coordinator

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Jamie Shield Unit Coordinator

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Schedule

Week 1 - 09 Nov 2020

Module/Topic	Chapter	Events and Submissions/Topic
Unit Introduction Functions and Graphs	Textbook: Chapter 4	Read Chapter 4; complete Week 1 exercises

Week 2 - 16 Nov 2020

Module/Topic	Chapter	Events and Submissions/Topic
Polynomial Functions	Textbook: Chapter 5	Read Chapter 5; complete Week 2 exercises

Week 3 - 23 Nov 2020

Module/Topic	Chapter	Events and Submissions/Topic
Exponential and Logarithmic Functions	Textbook: Chapter 6	Read Chapter 6; complete Week 3 exercises Online Quiz 1 opens Monday.

Week 4 - 30 Nov 2020

Module/Topic	Chapter	Events and Submissions/Topic
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Trigonometric and Hyperbolic Functions

Textbook: Chapter 7

Read Chapter 7; complete Week 4 exercises
Online Quiz 1 continues.

Vacation Week - 07 Dec 2020

Module/Topic

Chapter

Events and Submissions/Topic

Mid-Term Break

Online Quiz 1 continues.

Week 5 - 14 Dec 2020

Module/Topic

Chapter

Events and Submissions/Topic

Introduction to Calculus (I)

Textbook: Chapter 10.1-10.2

Read Chapter 10.1-10.2; complete Week 5 exercises
Online Quiz 1 closes Sunday.

Assignment 2 Due: Week 5 Friday (18 Dec 2020) 11:45 pm AEST

Week 6 - 21 Dec 2020

Module/Topic

Chapter

Events and Submissions/Topic

Introduction to Calculus (II)

Textbook: Chapter 10.3, 10.5 (Example 10.41-42), 11.1 (Examples 11.1, 11.2, 11.5)

Read Chapter 10.3, 10.5 (Example 10.41-42), 11.1 (Examples 11.1, 11.2, 11.5); complete Week 6 exercises
Online Quiz 2 opens.

Vacation Week - 28 Dec 2020

Module/Topic

Chapter

Events and Submissions/Topic

Christmas closure.

Online Quiz 2 continues.

Week 7 - 04 Jan 2021

Module/Topic

Chapter

Events and Submissions/Topic

Introduction to Calculus (III)

Textbook: Chapter 11.2, 11.4 (Examples 11.21-27)

Read Chapter 11.2, 11.4 (Examples 11.21-27); complete Week 7 exercises
Online Quiz 2 continues.

Week 8 - 11 Jan 2021

Module/Topic

Chapter

Events and Submissions/Topic

Introduction to Calculus (IV)

Textbook: Chapter 11.3.1, 12.1, 12.3 (Example 12.40-43)

Read Chapter 11.3.1, 12.1, 12.3 (Example 12.40-43); complete Week 8 exercises
Online Quiz 2 closes Sunday.

Week 9 - 18 Jan 2021

Module/Topic

Chapter

Events and Submissions/Topic

Introduction to Calculus (V)

Textbook: Chapter 13.1, 13.2.1 (Physical plane areas)

Read Chapter 13.1, 13.2.1 (Physical plane areas); complete Week 9 exercises
Online Quiz 3 opens.

Week 10 - 25 Jan 2021

Module/Topic

Chapter

Events and Submissions/Topic

Vectors

Textbook: Chapter 9.1

Read Chapter 9.1; complete Week 10 exercises
Online Quiz 3 continues.

Week 11 - 01 Feb 2021

Module/Topic

Chapter

Events and Submissions/Topic

Complex numbers

Textbook: Chapter 9.2

Read Chapter 9.2; complete Week 11 exercises
Online Quiz 3 continues.

Week 12 - 08 Feb 2021

Module/Topic

Chapter

Events and Submissions/Topic

Systems of Linear Equations
Unit review and examination
preparation

Textbook: Chapters 14.2, 15.1, 15.2.1,
15.2.3

Read Chapters 14.2, 15.1, 15.2.1,
15.2.3; complete Week 12 exercises
Online Quiz 3 closes Sunday.

Exam Week - 15 Feb 2021

Module/Topic

Chapter

Events and Submissions/Topic

Unit Review

Assessment Tasks

1 Online Quiz

Assessment Type

Online Quiz(zes)

Task Description

This assessment consists of three online quizzes. The quizzes will cover the mathematical concepts and basic operations of all topics covered over the term. The opening and closing dates for the quizzes are provided in the Unit Profile schedule and in Moodle.

Number of Quizzes

3

Frequency of Quizzes

Other

Assessment Due Date

Return Date to Students

Your result will be automatically displayed on screen once you completed your final attempt.

Weighting

20%

Assessment Criteria

Each question has 5 choices, of which, only ONE is correct. You are allowed 3 attempts to answer a question and the last answer will be saved and graded. No penalty is applied for multiple attempts. You get the full mark for a correct answer and no mark for an incorrect answer. No partial marks are available.

Referencing Style

- [Harvard \(author-date\)](#)

Submission

Online

Submission Instructions

You have up to three attempts for each question in the quiz.

Learning Outcomes Assessed

- Demonstrate foundation mathematics skills with emphasis on application to engineering disciplines
- Formulate and analyse simple mathematical models

Graduate Attributes

- Problem Solving
- Critical Thinking
- Information Literacy
- Ethical practice

2 Assignment 2

Assessment Type

Written Assessment

Task Description

This is an individual assignment.

This assignment will test your knowledge of topics covered in Weeks 1-4. The assignment details will be available on the

Moodle website.

Assessment Due Date

Week 5 Friday (18 Dec 2020) 11:45 pm AEST

Return Date to Students

Marked assignments are expected to be returned in 2 weeks after the submission deadline, or as soon as the process is completed.

Weighting

20%

Assessment Criteria

The final mark for this assignment is out of 20. Questions are awarded the full marks allocated if they are error-free. Partial marks are given if there are some errors. No marks are given if the question is not attempted or it contains so many errors as to render the attempt to be without value. Answers to all questions should be neatly and clearly presented and all appropriate working should be shown. Assignments will receive NO marks if submitted after the solutions are released.

Referencing Style

- [Harvard \(author-date\)](#)

Submission

Online

Submission Instructions

Submit one PDF file through the MATH11160 Moodle website.

Learning Outcomes Assessed

- Apply theory to practical problems drawn from a range of engineering disciplines
- Solve engineering related problems using foundation mathematics and introductory calculus techniques.

Graduate Attributes

- Communication
- Problem Solving
- Critical Thinking
- Information Literacy
- Ethical practice

3 Assignment 3

Assessment Type

Written Assessment

Task Description

This is an individual assignment.

This assignment will test your knowledge of topics covered in Weeks 5-9. The assignment details will be available on the Moodle website.

Assessment Due Date

Week 11 Friday (5 Feb 2021) 11:45 pm AEST

Return Date to Students

Marked assignments are expected to be returned in 2 weeks after the submission deadline, or as soon as the process is completed.

Weighting

20%

Assessment Criteria

The final mark for this assignment is out of 20. Questions are awarded the full marks allocated if they are error-free. Partial marks are given if there are some errors. No marks are given if the question is not attempted or it contains so many errors as to render the attempt to be without value. Answers to all questions should be neatly and clearly presented and all appropriate working should be shown. Assignments will receive NO marks if submitted after the solutions are released.

Referencing Style

- [Harvard \(author-date\)](#)

Submission

Online

Submission Instructions

Submit one PDF file through MATH11160 Moodle website.

Learning Outcomes Assessed

- Apply theory to practical problems drawn from a range of engineering disciplines
- Solve engineering related problems using foundation mathematics and introductory calculus techniques.

Graduate Attributes

- Communication
- Problem Solving
- Critical Thinking
- Information Literacy
- Ethical practice

4 Take Home Exam

Assessment Type

Take Home Exam

Task Description

Due to uncertainties of recovery post the COVID-19 pandemic, the Standard Examination for Term 3 of 2020 MATH11160 has been temporarily replaced by a Take Home Exam. You will have 24 hours to work on the Take Home Exam. During the 24-hour timeframe, you will need to download the exam from the unit's Moodle website, complete it and upload it through Moodle. Detailed instructions for the Take Home Exam will be communicated near the end of Term 3.

Assessment Due Date

The Take Home Exam will be scheduled during the Exam Week.

Return Date to Students

The results will be made available on Certification of Grades day. Like a regular exam, your marked assessment will not be returned to you. You may apply to see it as part of the first step of the review of grade process.

Weighting

40%

Minimum mark or grade

20 (50% of 40 marks)

Assessment Criteria

This assessment task is open book. You can reference all notes and study materials. Any submission after the deadline will not be accepted. You are required to do your own work, maintaining academic integrity with all honesty. Your submission may be subject to additional verification in the form of an oral defence through interview with the Unit Coordinator (or nominee). Students unable to satisfactorily answer questions about their submitted solution(s) will receive no marks for the question(s).

Questions are awarded the full marks allocated if they are error-free. Partial marks are given if there are some errors. No marks are given if the question is not attempted or it contains so many errors as to render the attempt to be without value. Answers to all questions should be neatly and clearly presented and all appropriate working should be shown.

Referencing Style

- [Harvard \(author-date\)](#)

Submission

Online

Submission Instructions

Submit one file through the Moodle website.

Learning Outcomes Assessed

- Demonstrate foundation mathematics skills with emphasis on application to engineering disciplines
- Formulate and analyse simple mathematical models

Graduate Attributes

- Communication
- Problem Solving
- Critical Thinking
- Information Literacy
- Ethical practice

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