



# MATH11160 *Technology Mathematics*

## Term 1 - 2019

Profile information current as at 07/05/2024 06:21 am

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. Online students are required to have significant access to a computer and make frequent use of the internet.

### 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

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 - 2019

- 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. **Examination**

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 Unit evaluation

##### Feedback

Some students felt this foundation maths unit is still too difficult to learn. Some students cannot even follow the review on fraction additions.

##### Recommendation

Consider directing such students to STEPS maths prior to starting this unit, as suggested by one student.

#### Feedback from Unit evaluation and other communications

##### Feedback

Some students cannot clearly read the lecturer's math notes during the real-time lecture (hence in recordings).

##### Recommendation

This was perhaps due to both the fast pace of lecture delivery and students' inability to distinguish the difference between English and Greek letters. Will try to adjust the pace in noting during lectures in 2019. Will refer those students who have difficulty in identifying the difference between English and Greek letters commonly used in mathematics to STEPS math units.

## 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 - Examination - 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 - Examination - 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

#### Additional Textbook Information

Copies are available for purchase at the CQUni Bookshop here: <http://bookshop.cqu.edu.au> (search 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)

## Referencing Style

All submissions for this unit must use the referencing style: [Harvard \(author-date\)](#)

For further information, see the Assessment Tasks.

## Teaching Contacts

**William Guo** Unit Coordinator

[w.guo@cqu.edu.au](mailto:w.guo@cqu.edu.au)

## Schedule

### Week 1 - 11 Mar 2019

Module/Topic	Chapter	Events and Submissions/Topic
Review of Basic Algebra (I)	Textbook: Chapter 1.1-1.3	Read Chapter 1.1-1.3; complete Tutorial 1 exercises

### Week 2 - 18 Mar 2019

Module/Topic	Chapter	Events and Submissions/Topic
Review of Basic Algebra (II) Summary of Basic Geometry	Textbook: Chapter 1.4-1.5; Chapter 2.4	Read Chapter 1.4-1.5, 2.4; complete Tutorial 2 exercises

### Week 3 - 25 Mar 2019

Module/Topic	Chapter	Events and Submissions/Topic
Inequalities and Sequences	Textbook: Chapter 3	Read Chapter 3; complete Tutorial 3 exercises Online Quiz opens Monday.

### Week 4 - 01 Apr 2019

Module/Topic	Chapter	Events and Submissions/Topic
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Functions and Graphs	Textbook: Chapter 4	Read Chapter 4; complete Tutorial 4 exercises Online Quiz continues.
<b>Week 5 - 08 Apr 2019</b>		
<b>Module/Topic</b>	<b>Chapter</b>	<b>Events and Submissions/Topic</b>
Polynomial Functions	Textbook: Chapter 5	Read Chapter 5; complete Tutorial 5 exercises Online Quiz continues.
<b>Vacation Week - 15 Apr 2019</b>		
<b>Module/Topic</b>	<b>Chapter</b>	<b>Events and Submissions/Topic</b>
Mid-Term Break		Online Quiz continues.
<b>Week 6 - 22 Apr 2019</b>		
<b>Module/Topic</b>	<b>Chapter</b>	<b>Events and Submissions/Topic</b>
Exponential and Logarithmic Functions	Textbook: Chapter 6	Read Chapter 6; complete Tutorial 6 exercises  <b>Online Quiz</b> Due: Week 6 Friday (26 Apr 2019) 11:55 pm AEST
<b>Week 7 - 29 Apr 2019</b>		
<b>Module/Topic</b>	<b>Chapter</b>	<b>Events and Submissions/Topic</b>
Review of Triangles and Trigonometry	Textbook: Chapter 2.1-2.3	Read Chapter 2.1-2.3; complete Tutorial 7 exercises
<b>Week 8 - 06 May 2019</b>		
<b>Module/Topic</b>	<b>Chapter</b>	<b>Events and Submissions/Topic</b>
Trigonometric and Hyperbolic Functions	Textbook: Chapter 7	Read Chapter 7; complete Tutorial 8 exercises
<b>Week 9 - 13 May 2019</b>		
<b>Module/Topic</b>	<b>Chapter</b>	<b>Events and Submissions/Topic</b>
Introduction to Calculus (I)	Textbook: Chapter 10.1-10.3, 10.5	Read Chapter 10.1-10.3, 10.5; complete Tutorial 9 exercises  <b>Assignment 2</b> Due: Week 9 Wednesday (15 May 2019) 11:55 pm AEST
<b>Week 10 - 20 May 2019</b>		
<b>Module/Topic</b>	<b>Chapter</b>	<b>Events and Submissions/Topic</b>
Introduction to Calculus (II)	Textbook: Chapter 11.1-11.2, 11.4.2	Read Chapter 11.1-11.2, 11.4.2; complete Tutorial 10 exercises
<b>Week 11 - 27 May 2019</b>		
<b>Module/Topic</b>	<b>Chapter</b>	<b>Events and Submissions/Topic</b>
Introduction to Calculus (III)	Textbook: Chapter 11.3.1, Chapter 12.1, Chapter 13.1	Read Chapter 11.3.1, Chapter 12.1, Chapter 13.1; complete Tutorial 11 exercises
<b>Week 12 - 03 Jun 2019</b>		
<b>Module/Topic</b>	<b>Chapter</b>	<b>Events and Submissions/Topic</b>
Unit review and examination preparation		<b>Assignment 3</b> Due: Week 12 Wednesday (5 June 2019) 11:55 pm AEST
<b>Review/Exam Week - 10 Jun 2019</b>		
<b>Module/Topic</b>	<b>Chapter</b>	<b>Events and Submissions/Topic</b>

## Assessment Tasks

### 1 Online Quiz

**Assessment Type**

Online Quiz(zes)

**Task Description**

This online quiz focus on enforcing learning of mathematical foundation in basic algebra, inequalities, sequences, introduction to function, and polynomial functions covered in the first five weeks. You are allowed 3 attempts to answer a question and the last answer will be saved and graded. No penalty for multiple attempts. The quiz will start on Monday of Week 3 and end on Friday of Week 6 (including the Vacation Week).

**Number of Quizzes**

3

**Frequency of Quizzes**

Other

**Assessment Due Date**

Week 6 Friday (26 Apr 2019) 11:55 pm AEST

**Return Date to Students**

Week 6 Friday (26 Apr 2019)

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

**Weighting**

20%

**Assessment Criteria**

Each question has 5 choices, in which only ONE is correct. 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**

Student has 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 is to test student's learning outcomes in triangles, exponential, logarithmic, trigonometric, and hyperbolic functions covered in Weeks 6-8. The assignment details will be available on the Moodle website.

**Assessment Due Date**

Week 9 Wednesday (15 May 2019) 11:55 pm AEST

**Return Date to Students**

Week 11 Wednesday (29 May 2019)

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 is out of 20. Questions are awarded the full marks allocated if they are error-free, partial marks if there are some problems, and no marks if not attempted or contain so many errors as to render the attempt to be without value. To ensure maximum benefit, 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

### 3 Assignment 3

**Assessment Type**

Written Assessment

**Task Description**

This is an individual assignment.

This assignment is to test student's learning outcomes in differentiation and integration covered in Weeks 9-11. The assignment details will be available on the Moodle website.

**Assessment Due Date**

Week 12 Wednesday (5 June 2019) 11:55 pm AEST

**Return Date to Students**

It is envisaged that feedback and solutions will be available prior to sitting the standard examination.

**Weighting**

20%

**Assessment Criteria**

The final mark is out of 20. Questions are awarded the full marks allocated if they are error-free, partial marks if there are some problems, and no marks if not attempted or contain so many errors as to render the attempt to be without value. To ensure maximum benefit, 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

## Examination

**Outline**

Complete an invigilated examination.

**Date**

During the examination period at a CQUniversity examination centre.

**Weighting**

40%

**Length**

180 minutes

**Minimum mark or grade**

50% (or 20 marks out of the 40 marks available in the exam)

**Exam Conditions**

Open Book.

**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