



MATH11160 *Technology Mathematics*

Term 1 - 2020

Profile information current as at 05/05/2024 12:13 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.

Corrections

Unit Profile Correction added on 30-04-20

The end of term examination has now been changed to an alternate form of assessment. Please see your Moodle site for details of the assessment. The learning outcomes assessed are unchanged.

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 - 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. **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 emails, and chats with past students

Feedback

Some students suggested to have more time (than the current 3 weeks) on calculus.

Recommendation

Will add 1 or 2 extra weeks in calculus from 2020 when some topics currently in MATH11160 are to be covered in MATH11247.

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	•	•	•	•

Graduate Attributes	Learning Outcomes			
	1	2	3	4
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 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)

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

Schedule

Week 1 - 09 Mar 2020

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 - 16 Mar 2020

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 - 23 Mar 2020

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 - 30 Mar 2020

Module/Topic	Chapter	Events and Submissions/Topic
--------------	---------	------------------------------

Functions and Graphs	Textbook: Chapter 4	Read Chapter 4; complete Tutorial 4 exercises Online Quiz continues.
Week 5 - 06 Apr 2020		
Module/Topic	Chapter	Events and Submissions/Topic
Polynomial Functions	Textbook: Chapter 5	Read Chapter 5; complete Tutorial 5 exercises Online Quiz continues.
Vacation Week - 13 Apr 2020		
Module/Topic	Chapter	Events and Submissions/Topic
Mid-Term Break		Online Quiz continues.
Week 6 - 20 Apr 2020		
Module/Topic	Chapter	Events and Submissions/Topic
Exponential and Logarithmic Functions	Textbook: Chapter 6	Read Chapter 6; complete Tutorial 6 exercises Online Quiz Due: Week 6 Friday (24 Apr 2020) 11:55 pm AEST
Week 7 - 27 Apr 2020		
Module/Topic	Chapter	Events and Submissions/Topic
Review of Triangles and Trigonometry	Textbook: Chapter 2.1-2.3	Read Chapter 2.1-2.3; complete Tutorial 7 exercises
Week 8 - 04 May 2020		
Module/Topic	Chapter	Events and Submissions/Topic
Trigonometric and Hyperbolic Functions	Textbook: Chapter 7	Read Chapter 7; complete Tutorial 8 exercises
Week 9 - 11 May 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 Tutorial 9 exercises Assignment 2 Due: Week 9 Wednesday (13 May 2020) 11:55 pm AEST
Week 10 - 18 May 2020		
Module/Topic	Chapter	Events and Submissions/Topic
Introduction to Calculus (II)	Textbook: Chapters 10.3, 10.5, 11.1	Read Chapters 10.3, 10.5, 11.1; complete Tutorial 10 exercises
Week 11 - 25 May 2020		
Module/Topic	Chapter	Events and Submissions/Topic
Introduction to Calculus (III)	Textbook: Chapter 11.2, 11.3.1	Read Chapter 11.2, 11.3.1; complete Tutorial 11 exercises
Week 12 - 01 Jun 2020		
Module/Topic	Chapter	Events and Submissions/Topic
Introduction to Calculus (IV) Unit review and examination preparation	Textbook: Chapters 12.1, 13.1	Read Chapters 12.1 and 13.1; complete Tutorial 12 exercises Assignment 3 Due: Week 12 Wednesday (3 June 2020) 11:55 pm AEST
Review/Exam Week - 08 Jun 2020		
Module/Topic	Chapter	Events and Submissions/Topic

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 (24 Apr 2020) 11:55 pm AEST

Return Date to Students

Week 6 Friday (24 Apr 2020)

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 (13 May 2020) 11:55 pm AEST

Return Date to Students

Week 11 Wednesday (27 May 2020)

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 (3 June 2020) 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