

In Progress

Please note that this Unit Profile is still in progress. The content below is subject to change.



MATH11219 *Applied Calculus*

Term 2 - 2024

Profile information current as at 19/05/2024 01:32 am

All details in this unit profile for MATH11219 have been officially approved by CQUiversity 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 the essential calculus concepts, processes, and techniques to develop mathematical models for science and engineering problems. 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 use the Fundamental Theorem of Calculus to illustrate the relationship between a function's derivative and integral. The theorem will also be applied to problems involving definite integrals. Differential calculus will be used to construct mathematical models that investigate various rate-of-change and optimisation problems. You will learn how to apply the standard rules and techniques of integration. Science and engineering disciplinary problems will be explored through the use of differential equations. Other essential elements of this unit are communicating results, concepts, and ideas using mathematics as a language. Mathematical software will also be used to visualise, analyse, validate, and solve problems studied in the unit.

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

Prerequisite: MATH11218 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 - 2024

- 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. **Online Quiz(zes)**

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 Unit Coordinator reflection

Feedback

A large segment of students would substantially benefit from ensuring sufficient practice with the fundamental mathematics curriculum covered in the unit.

Recommendation

Update unit assessment to include workbook submissions that capture the students practice, in developing solutions to the units curriculum, during the term.

Unit Learning Outcomes

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

1. Interpret the derivative as a rate of change to apply the rules of differentiation in investigating rates of change of functions
2. Construct mathematical models to investigate optimisation problems using differential calculus
3. Carry out the process of integration as the inverse operation of differentiation
4. Apply standard rules and techniques of integration to construct and analyse simple mathematical models involving rates of change and elementary differential equations
5. Use the Fundamental Theorem of Calculus to illustrate the relationship between the derivative and the integral of a function and apply the theorem to problems involving definite integrals
6. Communicate results, concepts, and ideas in context using mathematics as a language
7. Use 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



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

Information for Textbooks and Resources has not been released yet.

This information will be available on Monday 17 June 2024

Academic Integrity Statement

Information for Academic Integrity Statement has not been released yet.

This unit profile has not yet been finalised.