MATH11218 *Applied Mathematics*

Term 1 - 2017

Profile information current as at 12/10/2024 03:59 pm

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

This unit introduces the core mathematical concepts, processes and techniques necessary to support subsequent studies in applied calculus. These include the properties and applications of linear, quadratic, logarithmic and exponential functions. Students use trigonometry to solve triangles and trigonometric functions to model periodic phenomena. Complex numbers, vectors and matrix algrebra are used to develop solutions to problems. The concepts of elementary statistics needed to organise and analyse data are included. Students select appropriate mathematical methods appreciating the importance of underlying assumptions and then use them to investigate and solve problems, and interpret results. Other important elements of this unit are the communication of results, concepts and ideas using mathematics as a language, being able to document the solution to problems in a way that demonstrates a clear, logical and precise approach and communicating, working and learning in peer learning teams where appropriate. Mathematical software is also used to analyse and solve most problems studied in the unit. Note: If you have completed units MATH12223 or MATH12224 then you cannot take this 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: Students in CQ08 are not permitted to enrol in this unit. 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 1 - 2017

- Bundaberg
- Cairns
- Distance
- Gladstone
- Mackay
- 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: 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 Student feedback

Feedback

Students commented very favourably upon: the lecturing approach; provision of annotated lecture slides; availability of supporting materials and the level of support provided by staff and prompt attention to queries.

Recommendation

Continue to offer a positive supported learning experience.

Action

Further unit resources have been developed. These include updating many of the weekly tutorial materials and inclusion of in-depth solutions that students can use as exemplary models for solving selected mathematics problems. Lecture materials have received minor revision. Additional instructional videos for many of the key weekly topics have also been developed.

Feedback from Course coordinator reflection

Feedback

Develop/source additional instructional videos on key weekly topics.

Recommendation

Continue to develop/source additional supporting materials for the course.

Action

This is an ongoing development effort.

Unit Learning Outcomes

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

1. Apply the properties of linear, quadratic, logarithmic and exponential functions to analyse and solve problems.
2. Use trigonometry to solve triangles and trigonometric functions to model periodic phenomena.
3. Use complex numbers, vectors and matrix algebra to develop solutions to problems.
4. Apply the concepts of elementary statistics to organise and analyse data.
5. Select appropriate mathematical methods, use them to investigate and solve problems, and interpret the results.
6. Use mathematics as a language to communicate results, concepts and ideas in context.
7. Document the solution to problems in a way that demonstrates a clear, logical and precise approach.
8. Communicate, work and learn together in peer learning teams where appropriate.
9. Use mathematical software to visualise, analyse, validate and solve problems.

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	8	9
1 - Written Assessment - 20%	•				•	•	•		•

Assessment Tasks	Learning Outcomes								
	1	2	3	4	5	6	7	8	9
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	5	6	7	8	9
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 - Written Assessment - 20%	•	•				•		•		
2 - Written Assessment - 20%	•	•				•		•		
3 - Written Assessment - 20%	•	•			•	•		•		
4 - Examination - 40%	•	•				•		•		

Textbooks and Resources

Textbooks

MATH11218

Prescribed

Engineering Mathematics: A Foundation for Electronic, Electrical, Communications and Systems Engineers
Fourth Edition (2013)
Authors: Croft, A., Davison, R., Hargreaves, M. & Flint, J.
Pearson Education ESL
Harlow , England
ISBN: ISBN-10: 0273719777, ISBN-13: 9780273719779
Binding: Hardcover

Additional Textbook Information

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

Roland Dodd Unit Coordinator
r.dodd@cqu.edu.au

Schedule

Week 1 - 06 Mar 2017

Module/Topic	Chapter	Events and Submissions/Topic
Textbook Sections 1.1, 1.2,1.4 to 1.8	Chapter 1: Review of algebraic techniques	Textbook Exercises 1.2, 1.4 to 1.8 and Week 1 Tutorial Exercises

Week 2 - 13 Mar 2017

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 2 Tutorial Exercises

Week 3 - 20 Mar 2017

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 3 Tutorial Exercises

Week 4 - 27 Mar 2017

Module/Topic	Chapter	Events and Submissions/Topic

Textbook Sections 3.1 to 3.8	Chapter 3: The trigonometric functions	Textbook Exercises 3.3, 3.4, 3.6 to 3.8 and Week 4 Tutorial Exercises **Assignment 1** Due: Week 4 Friday (31 Mar 2017) 5:00 pm AEST

Week 5 - 03 Apr 2017

Module/Topic	Chapter	Events and Submissions/Topic
Textbook Sections 4.1 to 4.7	Chapter 4: Coordinate systems	Textbook Exercises 4.2 to 4.7 and Week 5 Tutorial Exercises

Vacation Week - 10 Apr 2017

Module/Topic	Chapter	Events and Submissions/Topic

Week 6 - 17 Apr 2017

Module/Topic	Chapter	Events and Submissions/Topic
Textbook Sections 9.1 to 9.9	Chapter 9: Complex numbers	Textbook Exercises 9.2 to 9.5, 9.7, 9.9 and Week 6 Tutorial Exercises

Week 7 - 24 Apr 2017

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 7 Tutorial Exercises

Week 8 - 01 May 2017

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 8 Tutorial Exercises **Assignment 2** Due: Week 8 Friday (5 May 2017) 5:00 pm AEST

Week 9 - 08 May 2017

Module/Topic	Chapter	Events and Submissions/Topic
Textbook Sections 7.1 to 7.7	Chapter 7: Vectors	Textbook Exercises 7.2, 7.3, 7.5 to 7.7 and Week 9 Tutorial Exercises

Week 10 - 15 May 2017

Module/Topic	Chapter	Events and Submissions/Topic
Textbook Sections 28.1 to 28.4, 28.6 to 28.7, 29.1 to 29.5	Chapter 28: Probability and Chapter 29: Statistics and probability distributions	Textbook Exercises 28.2 to 28.4, 28.6-28.7, 29.2, 29.3, 29.5 and Week 10 Tutorial Exercises

Week 11 - 22 May 2017

Module/Topic	Chapter	Events and Submissions/Topic
Textbook Sections 29.6 to 29.15	Chapter 29: Statistics and probability distributions	Textbook Exercises 29.6 to 29.15 and Week 11 Tutorial Exercises **Assignment 3** Due: Week 11 Friday (26 May 2017) 5:00 pm AEST

Week 12 - 29 May 2017

Module/Topic	Chapter	Events and Submissions/Topic
Revision		Revision and Week 12 Tutorial Exercises

Review/Exam Week - 05 Jun 2017

Module/Topic	Chapter	Events and Submissions/Topic

Exam Week - 12 Jun 2017

Module/Topic	Chapter	Events and Submissions/Topic

Assessment Tasks

1 Assignment 1

Assessment Type
Written Assessment

Task Description
Please see the unit Moodle site for the questions in this assignment. Questions are from the unit content covered in Weeks 1-3. Assignment 1 will be available for download under the "Assessment" block on the unit Moodle site, together with complete instructions for online submission of your solutions to the assignment questions. Marks will be deducted for assignments which are submitted late without prior permission or adequate explanation. Assignments will receive NO marks if submitted after the solutions are released (2 weeks after the assignment submission date) but will still be counted as submitted.

Assessment Due Date
Week 4 Friday (31 Mar 2017) 5:00 pm AEST

Return Date to Students
Week 6 Friday (21 Apr 2017)

Usually within two weeks of the due date; through the unit Moodle site.

Weighting
20%

Assessment Criteria
The final mark is out of 20. Questions are from unit content covered in Weeks 1-3. 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. The final Assignment 1 mark is scaled to an assessment weighting out of 20. Answers to all questions should be neatly and clearly presented. Full working is required to obtain maximum credit for solutions.

Referencing Style

- Harvard (author-date)

Submission
Online

Submission Instructions
Assignment 1 is uploaded as a single document at the unit Moodle site for MATH11218. Full details are provided on the unit Moodle site.

assessmentOutcome

- Apply the properties of linear, quadratic, logarithmic and exponential functions to analyse and solve problems.
- Select appropriate mathematical methods, use them to investigate and solve problems, and interpret the results.
- Use mathematics as a language to communicate results, concepts and ideas in context.
- Document the solution to problems in a way that demonstrates a clear, logical and precise approach.
- Use mathematical software to visualise, analyse, validate and solve problems.

assessmentGradAttribute

- Communication
- Problem Solving
- Information Technology Competence
- Ethical practice

2 Assignment 2

Assessment Type
Written Assessment

Task Description
Please see the unit Moodle site for the questions in this assignment. Questions are from the unit content covered in Weeks 4-7. Assignment 2 will be available for download under the "Assessment" block on the unit Moodle website, together with complete instructions for online submission of your solutions to the assignment questions.

Marks will be deducted for assignments which are submitted late without prior permission or adequate explanation. Assignments will receive NO marks if submitted after the solutions are released (2 weeks after the assignment submission date) but will still be counted as submitted.

Assessment Due Date
Week 8 Friday (5 May 2017) 5:00 pm AEST

Return Date to Students
Week 10 Friday (19 May 2017)

Usually within two weeks of the due date; through the unit Moodle site.

Weighting
20%

Assessment Criteria
The final mark is out of 20. Questions are from unit content covered in Weeks 4-7. 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. The final Assignment 1 mark is scaled to an assessment weighting out of 20. Answers to all questions should be neatly and clearly presented. Full working is required to obtain maximum credit for solutions.

Referencing Style

- Harvard (author-date)

Submission
Online

Submission Instructions
Assignment 2 is uploaded as a single document at the unit Moodle site for MATH11218. Full details are provided on the unit Moodle site.

assessmentOutcome

- Use trigonometry to solve triangles and trigonometric functions to model periodic phenomena.
- Use complex numbers, vectors and matrix algebra to develop solutions to problems.
- Select appropriate mathematical methods, use them to investigate and solve problems, and interpret the results.
- Use mathematics as a language to communicate results, concepts and ideas in context.
- Document the solution to problems in a way that demonstrates a clear, logical and precise approach.
- Use mathematical software to visualise, analyse, validate and solve problems.

assessmentGradAttribute

- Communication
- Problem Solving
- Information Technology Competence
- Ethical practice

3 Assignment 3

Assessment Type
Written Assessment

Task Description
This is a group assignment. The assignment will need to be submitted online through the unit Moodle site, by the Team Leader nominated by the group. The assignment involves the completion of solutions to a set of specified questions. Questions are from the unit content covered in Weeks 1-11. Assignment 3 will be available for download under the "Assessment" block on the unit Moodle site, together with complete instructions for online submission of your solutions to the assignment questions. Marks will be deducted for assignments which are submitted late without prior permission or adequate explanation. Assignments will receive NO marks if submitted after the solutions are released (2 weeks after the assignment submission date) but will still be counted as submitted.

Assessment Due Date
Week 11 Friday (26 May 2017) 5:00 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
A designated Team Leader, that is nominated by the group, will submit the Assignment 3 submission on behalf of the entire group.
The assignment questions are from unit content covered in Weeks 1-11. 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. Full working is required to obtain maximum credit for solutions. The final Assignment 3 mark is scaled to an assessment weighting out of 20.
A maximum of up to three (3) students are permitted to work in the group. Groups with only one member can also complete the assignment. Students should know that there is to be no across-group discussion of, or consultation on, solutions to the questions posed in this part of the assignment. Students are reminded that any evidence of plagiarism will be dealt with under the university policy.

Referencing Style

- Harvard (author-date)

Submission
Online Group

Submission Instructions
This group assignment is to be submitted by one student (the Team Leader) on behalf of all team members. Assignment 3 is uploaded as a single document at the unit Moodle site for MATH11218. Full details are provided on the unit Moodle site.

assessmentOutcome

- Select appropriate mathematical methods, use them to investigate and solve problems, and interpret the results.
- Use mathematics as a language to communicate results, concepts and ideas in context.
- Document the solution to problems in a way that demonstrates a clear, logical and precise approach.
- Communicate, work and learn together in peer learning teams where appropriate.
- Use mathematical software to visualise, analyse, validate and solve problems.

assessmentGradAttribute

- Communication
- Problem Solving
- Team Work
- Information Technology Competence
- 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

Exam Conditions
Open Book.

Materials
Calculator - all non-communicable calculators, including scientific, programmable and graphics calculators are authorised
Dictionary - non-electronic, concise, direct translation only (dictionary must not contain any notes or comments).

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assessmentOutcome

assessmentGradAttribute

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