School of Information and Physical Sciences

MATH1002: Foundational Studies in Mathematics

Callaghan
Semester 1 - 2024

COURSE OUTLINE

OVERVIEW

Course Description

Many relationships in the real world can be modelled via a mathematical function of one or more variables. This course introduces common functions of one variable used in the sciences, equips students with the tools of differential and integral calculus to analyse the properties of such functions, and develops an understanding of the role of functions and calculus in real-world systems.

This course is suitable for students with a background in high-school mathematics who have not studied, or who have not succeeded in, 2 unit or higher mathematics courses at HSC level.

Students cannot count MATH1002 for credit if they have previously passed MATH1100, MATH1110 or MATH1210.

Academic Progress Requirements

Nil

Requisites

Students who have successfully completed FNMT1002 cannot enrol in this course.

Assumed Knowledge

HSC General Mathematics, or MATH1001, or equivalent.

Contact Hours

Callaghan
Lecture
Face to Face On Campus
4 hour(s) per week(s) for 13 week(s) starting Week 1
These contact hours are for delivery of the course in a semester term. For a summer/winter term the lectures may be delivered as face to face compressed in to the shorter term or blended with online lectures combined with face to face to face workshops.
Workshop
Face to Face On Campus
2 hour(s) per week(s) for 11 week(s)
Compulsory Requirement: Every student must attend a minimum of 80% of workshops to meet course requirements

Unit Weighting Workload

10
Students are required to spend on average 120-140 hours of effort (contact and non-contact) including assessments per 10 unit course.

CONTACTS

Course Coordinator

Callaghan
Dr Mona Bahri
Mona.Bahri@newcastle.edu.au
Consultation: To be advised on canvas

Teaching Staff

School Office

School of Information and Physical Sciences
SR233, Social Sciences Building
Callaghan
CESE-SIPS-Admin@newcastle.edu.au
+61 2 4921 5513
9am-5pm (Mon-Fri)

SYLLABUS

Course Content

1. Essential Algebra including expanding, factoring, fractions and powers, polynomials and surds
2. Real Valued Functions including exponentials and trigonometric functions and their inverse functions; sketching graphs
3. Differentiation and integration of simple functions; geometric interpretation and applications

Course Learning Outcomes

On successful completion of this course, students will be able to:

1. Apply skills in algebra, differential calculus and integral calculus to solve mathematical problems

2. Use mathematical functions and their graphs to clearly specify relationships between variables

3. Recall and apply properties of common functions of a single real variable to solve mathematical problems

Course Materials

Notes on Canvas

ASSESSMENTS

This course has 4 assessments. Each assessment is described in more detail in the sections below.

	Assessment Name	Due Date	Involvement	Weighting	Learning Outcomes
1	In-class Tests	In your timetabled workshop in week 7	Individual	20%	1, 2, 3
2	Workshop quiz	In your timetabled workshop	Individual	30%	1, 2, 3
3	Online Quiz	Sunday at 11:59pm.	Individual	20%	1, 2, 3
4	Formal Examination	Formal examination period	Individual	30%	1, 2, 3

Late Submissions

The mark for an assessment item submitted after the designated time on the due date, without an approved extension of time, will be reduced by 10% of the possible maximum mark for

that assessment item for each day or part day that the assessment item is late. Note: this applies equally to week and weekend days.

Assessment 1 - In-class Tests

Assessment Type	In Term Test
Purpose	To test the students' knowledge of the first half of the course.
Description	The test is of 100 minutes duration. The test will cover Chapter 1, 2, 3, and 4 of the course. You are allowed to bring one page A4 of hand-written notes and a non-programmable calculator.
Weighting	20%
Length	100 minutes
Due Date	In your timetabled workshop
Submission Method	In Class
Assessment Criteria	Mathematical correctness
Return Method	In Class
Feedback Provided	In Class - .

Assessment 2 - Workshop quiz

Assessment Type	Quiz
Purpose	Workshop Quizzes are end of chapter assessments. They are aimed to develop and test skills required for mathematical writing and sitting on closed-book assessments environment.
Description	Five workshop quizzes per semester. You are allowed to bring half of a page A4 of hand-written notes and a non-programmable calculator.
Weighting	30%
Length	20 minutes
Due Date	In your timetabled workshop.
Submission Method	In Class
Assessment Criteria	Mathematical correctness
Return Method	In Class
Feedback Provided	In Class - .

Assessment 3 - Online Quiz

Assessment Type	Quiz
Purpose	The online quizzes are embedded in the online tutorials. They are aimed to develop and test the students learning-by-doing skills and engagement to the course.
Description	Short quizzes embedded in the online tutorials. They go live every Monday at 9:00 Am and due on Sunday at 11:59pm.
Weighting	20%
Due Date	Sunday at 11:59pm.
Submission Method	Online
Assessment Criteria	Correctness of answers to questions on Canvas.
Return Method	Online
Feedback Provided	Online - .

Assessment 4 - Formal Examination

Assessment Type	Formal Examination
Purpose	To test the student's knowledge of the second half of the course.
Description	The exam is of 120 minutes duration. The test will cover Chapter 5, 6, 7, and 8 of the course. You are allowed to bring two pages A4 of hand-written notes and a non-programmable calculator.
Weighting	30%
Length	120 minutes
Due Date	Formal examination period
Submission Method	Formal Exam

Assessment Criteria	Mathematical correctness
Return Method	Not Returned
Feedback Provided	No Feedback - .

ADDITIONAL INFORMATION

Grading Scheme

This course is graded as follows:

Range of Marks	Grade	Description
85-100	High Distinction (HD)	Outstanding standard indicating comprehensive knowledge and understanding of the relevant materials; demonstration of an outstanding level of academic achievement; mastery of skills*; and achievement of all assessment objectives.
75-84	Distinction (D)	Excellent standard indicating a very high level of knowledge and understanding of the relevant materials; demonstration of a very high level of academic ability; sound development of skills*; and achievement of all assessment objectives.
65-74	Credit (C)	Good standard indicating a high level of knowledge and understanding of the relevant materials; demonstration of a high level of academic achievement; reasonable development of skills*; and achievement of all learning outcomes.
50-64	Pass (P)	Satisfactory standard indicating an adequate knowledge and understanding of the relevant materials; demonstration of an adequate level of academic achievement; satisfactory development of skills*; and achievement of all learning outcomes.
0-49	Fail (FF)	Failure to satisfactorily achieve learning outcomes. If all compulsory course components are not completed the mark will be zero. A fail grade may also be awarded following disciplinary action.

*Skills are those identified for the purposes of assessment task(s).

Communication Methods

Communication methods used in this course include:

- Canvas Course Site: Students will receive communications via the posting of content or announcements on the Canvas course site.
- Email: Students will receive communications via their student email account.

Course Evaluation

Each year feedback is sought from students and other stakeholders about the courses offered in the University for the purposes of identifying areas of excellence and potential improvement.

Oral Interviews (Vivas)

As part of the evaluation process of any assessment item in this course an oral examination (viva) may be conducted. The purpose of the oral examination is to verify the authorship of the material submitted in response to the assessment task. The oral examination will be conducted in accordance with the principles set out in the Oral Examination (viva) Procedure. In cases where the oral examination reveals the assessment item may not be the student's own work the case will be dealt with under the Student Conduct Rule.

Academic Misconduct

All students are required to meet the academic integrity standards of the University. These standards reinforce the importance of integrity and honesty in an academic environment. Academic Integrity policies apply to all students of the University in all modes of study and in all locations. For the Student Academic Integrity Policy, refer to https://policies.newcastle.edu.au/document/view-current.php?id=35.

Adverse Circumstances

The University acknowledges the right of students to seek consideration for the impact of allowable adverse circumstances that may affect their performance in assessment item(s). Applications for special consideration due to adverse circumstances will be made using the online Adverse Circumstances system where:

1. the assessment item is a major assessment item; or
2. the assessment item is a minor assessment item and the Course Co-ordinator has specified in the Course Outline that students may apply the online Adverse Circumstances system;
3. you are requesting a change of placement; or
4. the course has a compulsory attendance requirement.

Before applying you must refer to the Adverse Circumstance Affecting Assessment Items Procedure available at:
https://policies.newcastle.edu.au/document/view-current.php?id=236

Important Policy Information

The Help button in the Canvas Navigation menu contains helpful information for using the Learning Management System. Students should familiarise themselves with the policies and procedures at https://www.newcastle.edu.au/current-students/respect-at-uni/policies-and-procedures that support a safe and respectful environment at the University.

This course outline was approved by the Head of School. No alteration of this course outline is permitted without Head of School approval. If a change is approved, students will be notified and an amended course outline will be provided in the same manner as the original.