Pathways and Academic Learning Support Centre

EPMATH 209: Intermediate Mathematics

Ourimbah

Semester 1 - 2024

COURSE OUTLINE

The Pathways and Academic Learning Support Centre recognises and respects the unique history and culture of Aboriginal and Torres Strait Islander peoples and their unbroken relationship with the lands and the waters of Australia over millennia. We are dedicated to reconciliation and to offering opportunities for Aboriginal and Torres Strait Islander peoples to access and succeed in higher education. The Centre is committed to providing a culturally safe and inclusive environment for all.

OVERVIEW

Course Description

This course is an intermediate level mathematics course which covers the introductory concepts as well as further skills in algebra and functions and further practice in problem solving. The course content includes skills in numeracy, algebra, linear and non-linear functions, graphing, exponential and logarithmic theory. The course aims to provide a sound foundation in a wide range of basic mathematical skills and in their application to problem solving.

Academic Progress Requirements

Nil

Requisites

If you have successfully completed EPMATH110, EPMATH124, EPMATH125, EPMATH135 or EPMATH302 you cannot enrol in this course.

Assumed Knowledge

Advanced or Intermediate Level School Certificate Mathematics or equivalent.

Students who have not studied mathematics for some time may benefit from taking a Mathematics Bridging course before enrolling in this course.

Contact Hours

Lecture
Face to Face On Campus
2 hour(s) per week(s) for 12 week(s) starting Week 1

Tutorial
Face to Face On Campus
1 hour(s) per week(s) for 5 week(s) starting Week 2

Tutorial
Face to Face On Campus
1 hour(s) per week(s) for 6 week(s) starting Week 8

Unit Weighting

10

Workload

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

Dr Paul Sunderland
Paul.Sunderland@newcastle.edu.au
Consultation: Please email to schedule an appointment.

Teaching Staff

Other teaching staff will be advised on the course Canvas site.

School Office

Callaghan
Ground Floor, General Purpose Building (GP)
Ph: 02 4921 5558
enabling@newcastle.edu.au

Ourimbah
HO 168, Humanities Building
Ph: 02 4348 4076
enabling@newcastle.edu.au

SYLLABUS

Course Content

Algebra
- Laws
- Substitution
- Negative numbers
- Order of operations
- Simplification
- Expanding brackets
- Factorisation
- Fractions
- Indices

Equations
- Basic
- With fractions
- With powers/roots
- Word problems
- Formulas
- Simultaneous equations
- Word problems
- Rate problems

Exponentials and logarithms
- Exponential and logarithmic notation
- Solution of exponential equations using logarithms
- Applications to real world problems

Linear functions
- Equation of a straight line
- Graphing linear functions
- Intersection of lines
- Line of best fit
- Application to real world problems

Non-linear functions
- Graphs of non-linear functions
- Quadratic
- Cubic
- Reciprocal
- Exponential
- Logarithmic
- Mathematical modelling

Course Learning Outcomes

On successful completion of this course, students will be able to:
1. Explain and apply number theory, algebra, functions, graphing and exponential and logarithmic theory.
2. Solve mathematical problems using critical reasoning and problem solving skills.

Course Materials

Students will require a scientific calculator (the CASIO fx-82 is highly recommended but any scientific calculator will work). All other course materials will be provided on the course Canvas site. Students are not required to purchase a textbook.

SCHEDULE

Week	Week Begins	Topic	Learning Activity	Assessment Due
1	26 Feb	**1. Algebra**: rules of algebra, negative numbers, evaluating algebraic expressions, order of operations.	**NO TUTORIAL**	**NO QUIZ**
2	4 Mar	**2. Algebra**: like terms, indices, expanding brackets, factorisation.	Tutorial 1	Quiz 1
3	11 Mar	**3. Algebraic Fractions**: equivalent fractions, common denominators, addition, subtraction, multiplication, division.	Tutorial 2	Quiz 2
4	18 Mar	**4. Equations**: inverse operations, balancing equations, solving equations, equations with brackets, equations with fractions.	Tutorial 3	Quiz 3
5	25 Mar	**5. Equations**: powers and roots, rearranging formulas, word problems, rate problems.	Tutorial 4	Quiz 4
6	1 Apr	**6. Simultaneous Equations**: forming simultaneous equations, solution methods, word problems. **Lecture to be recorded online**	Tutorial 5 **Tutorial to be recorded online**	Quiz 5
7	8 Apr	**CLASS TEST DURING LECTURE**	**NO TUTORIAL**	**NO QUIZ** **CLASS TEST DURING LECTURE**
Recess				
Recess				
8	29 Apr	**7. Exponentials & logarithms**: definition of logarithms, properties of logarithms, solution of exponential and logarithmic equations.	Tutorial 6	QUIZ 6
9	6 May	**8. Linear functions**: equation of a straight line, gradient, graphing linear functions.	Tutorial 7	QUIZ 7
10	13 May	**9. Linear functions**: intersection of lines, line of best fit, applications.	Tutorial 8	QUIZ 8
11	20 May	**10. Non-linear functions**: quadratics, axis of symmetry, cubic & polynomial functions.	Tutorial 9	QUIZ 9
12	27 May	**11. Non-linear functions**: reciprocal functions, exponential graphs, exponential growth/decay, logarithmic functions.	Tutorial 10	QUIZ 10
13	3 Jun	**NO LECTURE**	Tutorial 11 – Revision	**NO QUIZ**
Examination Period				
Examination Period				

ASSESSMENTS

This course has 3 assessments. Each assessment is described in more detail in the sections below.

	Assessment Name	Due Date	Involvement	Weighting	Learning Outcomes
1	Quizzes	Sunday 11:59pm Weeks 2, 3, 4, 5, 6, 8, 9, 10, 11, 12	Individual	20%	1
2	Class Test	Week 7 Lecture	Individual	40%	1
3	Final Exam	During Formal Examination period	Individual	40%	1, 2

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 5% 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 - Quizzes

Assessment Type Quiz
Description There will be 10 x 15 minute quizzes, completed in Canvas, based on the previous week's lecture topics. Each quiz will usually consist of 5 multiple choice questions. The quizzes will open at 9am on Monday and close by Sunday 11:59pm.
Weighting 20%
Due Date Sunday 11:59pm Weeks 2, 3, 4, 5, 6, 8, 9, 10, 11, 12
Submission Method Online
Assessment Criteria Correct answers
Return Method Online
Feedback Provided Feedback will be provided in Canvas.

Assessment 2 - Class Test

Assessment Type In Term Test
Description An in-class test covering all topics from lectures 1-5 (inclusive). All answers (including working out) must be written on paper and submitted at the end of the time period. This test permits the use of a memory aid.
Weighting 40%
Due Date Week 7 during the lecture
Submission Method In class
Assessment Criteria The marking scheme will have a strong emphasis on the problem-solving technique. Clearly written solutions showing all steps in the working-out will attract the highest marks.
Return Method In class
Feedback Provided In class

Assessment 3 - Final Exam

Assessment Type Formal Examination
Description A formal exam covering all topics from lectures 6-11 (inclusive). All answers (including working out) must be written on paper and submitted at the end of the time period. This exam permits the use of a memory aid.
Weighting 40%
Due Date During Formal Exam period
Submission Method Formal Exam
Assessment Criteria The marking scheme will have a strong emphasis on the problem-solving technique. Clearly written solutions showing all steps in the working-out will attract the highest marks.
Return Method This assessment will not be returned
Feedback Provided No feedback will be provided for this assessment

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.

Communication Methods

Email is the principal form of communication at the university and within this course. Always use your student email (NUmail), rather than a private email address, and check this regularly. As Course Coordinator I will try to respond to your email within three (3) working days. I will not normally respond to emails over the weekends. Please be courteous in your email communication and in the online space.

Canvas is used to distribute course material, announcements and other information. It is also used for online quizzes and to allow students to track their individual progressive assessment results throughout the semester via Grades.

Discussions forums in Canvas can be used to ask questions about minor issues. Students are strongly encouraged to use these to communicate with each other, discuss issues relating to the course, and solve minor problems.

Attendance and Engagement

In addition to face-to-face hours in class, out-of-class study and related work will require an additional commitment of up to 10 hours per week of reading, preparation, and study time over the semester. Students are required to spend on average 120-140 hours of effort (contact and non-contact hours including assessment) per semester per 10 unit course.

To maximise your learning opportunities, you should read all relevant material prior to attending class.

It is strongly recommended that you attend your classes every week. Our data shows that you will get better results if you attend class with your peers. If you do have to miss a class, you should catch up on any missed work by accessing lecture recordings if you are enrolled face-to-face. While online tutorials are recorded, on-campus tutorials are not, so you should view other resources available on your Canvas site and contact your course coordinator if you would like advice on how to best catch up on any material that was missed. **If you are unable to attend classes regularly you should reach out to your course coordinator as soon as possible to discuss ways that you can continue to engage with the learning material.**

A plan of regular revision throughout the semester is also strongly recommended to help you manage your time, consolidate information and retain that knowledge for the duration of the

course and beyond.

Assessment items have been designed to reinforce and revise the course material, and ensure you are up to date with course content. You are required to submit all assessable items by the due dates unless prior arrangements have been made.

Additional Contact Details

If you have any questions about your course, please speak with your course coordinator, lecturer or tutor first. For general enquiries, please contact the Pathways and Academic Learning Support Centre Office or your Student Liaison Officer. Contact details for both the office and Student Liaison Officers can be found here.

Yapug students can also contact your Indigenous Enabling Learning Advisor Hannah Pipe or your Program Convenor Dan Collins.

Final Examination

This course has a formal examination. All formal examinations will be held during the University's Examination Period. Your exam timetable will be available approximately 4 weeks before the exam period and you must ensure that you are available to undertake your exam at any time during the Examination Period.

If you are unable to attend a scheduled examination due to illness or you have another significant, verifiable reason, contact the Pathways and Academic Learning Support Office and advise your lecturer at the earliest opportunity. Completion of an online Adverse Circumstances application including appropriate documentation is required.

If you have a permanent or temporary disability or medical condition that means you may need adjustments made during your examination, you must register with AccessAbility at the start of semester so that these arrangements can be made.

If you have a Reasonable Adjustment Plan (RAP), your examination will be scheduled in accordance with it. If you are unable to attend your scheduled examination due to illness or other circumstance, you will need to submit and online Adverse Circumstances application and supply appropriate documentation to support your application. Your RAP is not able to be used as your documentation.

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 Adverse Circumstances must be lodged via the online Adverse Circumstances system for all individual assessment items worth 30% or greater **by 11:00pm on the day the assessment is due**. For assessment items less than 30%, you will need to contact your Course Coordinator by 11:00pm on the due date of the assessment item.

Before applying you must refer to the Adverse Circumstances Affecting Assessment Items Procedure and the Adverse Circumstances Affecting Assessment Items Policy.

Please note that students must submit their adverse circumstances application via the online Adverse Circumstances system by 11:00pm on the due date of the assessment item, even if you are using a Reasonable Adjustment Plan (RAP) as your supporting documentation.

Written Assessment Word Limits

If this course includes written assessments, the word limit listed will include headings, sub-heading, in-text citations, quotes and referencing but does not include the list of references, appendices and footnotes. You will not receive a penalty for exceeding the word limit (there is a tolerance of up to 10%), but any work after the maximum word limit may not be included within the allocation of marks.

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. Please refer to the Student Academic Integrity Policy.

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.
Workplace Health and Safety Requirements	There are no specific WH&S requirements for this course.
Software	Free Microsoft Office software is available to enrolled students here and includes 5 TB of free cloud storage with OneDrive.
Timetable	Your timetable for this course is available via the myUni Student Portal and can also be found here.
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.
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 that support a safe and respectful environment at the University.

This course outline was approved by the Director, PALS. No alteration of this course outline is permitted without Director 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.