Pathways and Academic Learning Support Centre

EPMATH 253: Advanced Mathematics 2

Callaghan

Semester 2 - 2023

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 aims to develop the trigonometric and calculus skills necessary for entry to an undergraduate science or mathematics degree and covers the topics of trigonometry, and differential and integral calculus, with some applications in the physical sciences.

Requisites

You must have successfully completed EPMATH153 in order to enrol in this course.

You cannot enrol in this course if you are currently enrolled in or have successfully completed EPMATH125, EPMATH134, EPMATH135, EPMATH234, EPMATH235, EPMATH302, EPMATH303 or EPMATH309.

Contact Hours

Lecture
Face to Face On Campus
2 hour(s) per Week for 12 Weeks

Tutorial
Face to Face On Campus
1 hour(s) per Week for 11 Weeks

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.

COURSE OUTLINE

CONTACTS

Course Coordinator

Dr Scott Sciffer
Scott.Sciffer@newcastle.edu.au
(02) 4921 7874
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

The course covers:
1. trigonometry: sine and cosine rules, graphing trig functions, trig identities.
2. differentiation: definition, derivatives of standard functions, product rule, quotient rule, chain rule, optimisation and other applications.
3. integration: definition, integration by antidifferentiation, integration by substitution, exponential growth and decay, and other applications.

Course Learning Outcomes

On successful completion of this course, students will be able to:
1. Identify and use trigonometric skills sufficient for the understanding and practice of calculus.
2. Use differentiation theory and skills to solve real-world problems.
3. Use integration theory and skills to solve real-world problems.
4. Communicate mathematics in oral and written forms.
5. Determine the correct use of mathematical notation.
6. Formulate and solve real world problems in the language of mathematics.

Course Materials

All course materials will be provided on the course Canvas site.

SCHEDULE

Week	Week Begins	Topic	Learning Activity	Assessment Due
1	17 Jul	Elementary Trig	Lecture	
2	24 Jul	Advanced Trig	Lecture and Tutorial	Quiz and Assignment 1
3	31 Jul	Trig graphs and equations	Lecture and Tutorial	Quiz and Assignment 2
4	7 Aug	Trig identities and equations	Lecture and Tutorial	Quiz and Assignment 3
5	14 Aug	Defining differentiation	Lecture and Tutorial	Quiz and Assignment 4
6	21 Aug	Algebra of derivatives	Lecture and Tutorial	Quiz and Assignment 5
7	28 Aug	Exponentials and logarithms	Lecture and Tutorial	Quiz and Assignment 6
8	4 Sep	Applications of differentiation	Lecture and Tutorial	Quiz and Assignment 7
9	11 Sep	More applications of differentiation	Lecture and Tutorial	Quiz and Assignment 8
10	18 Sep	Antidifferentiation with applications	Lecture and Tutorial	Quiz and Assignment 9
Mid Term Break				
Mid Term Break				
11	9 Oct	Defining integration	Lecture and Tutorial	Quiz and Assignment 10
12	16 Oct	Substitution and revolution	Lecture and Tutorial	Quiz and Assignment 11
13	23 Oct	Revision	Lecture and Tutorial	Quiz and Assignment 12 Calculus assignment
Examination Period				
Examination Period				

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	Calculus Assignment	Sunday 29th October at 11:59PM	Individual	10%	1, 2, 3, 4
2	Weekly Assignments	Every Sunday at 11:59PM from Week 2	Individual	20%	4, 5, 6
3	Weekly Quizzes	Every Sunday at 11:59PM from Week 2	Individual	20%	1, 2, 3, 4, 5, 6
4	Final Examination	TBA in the exam period	Individual	50%	1, 2, 3, 5, 6

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 - Calculus Assignment

Assessment Type	Written Assignment
Description	Each student will be given a different applied maths problem requiring the use of differential calculus. They will be asked to provide a comprehensive exposition of the solution of the problem. The emphasis is not just on getting the correct answer to the problem, but in communicating that solution effectively.
Weighting	10%
Due Date	29/10/23 11:59PM
Submission Method	Submit file to Canvas
Assessment Criteria	Corrected of solution, but more importantly, clarity of exposition.
Return Method	Via Canvas
Feedback Provided	Via Canvas

Assessment 2 - Weekly Assignments

Assessment Type	Written Assignment
Description	Associated with every lecture there will be a short assignment focused solely on that week's material. Slightly more involved questions requiring worked solutions.
Weighting	20% (using best 10 out of 12)
Due Date	11:59PM Sunday night at the end of the following week of the relevant lecture.
Submission Method	Submit file to Canvas
Assessment Criteria	Correctness of solution, sufficient working to justify solution.
Return Method	Via Canvas
Feedback Provided	Via Canvas

Assessment 3 - Weekly Quizzes

Assessment Type	Quiz
Description	Associated with every lecture there will be a short quiz focused solely on that week's material. Multiple choice or numerical answer questions testing fundamental concepts.
Weighting	20%
Due Date	11:59PM Sunday night at the end of the following week of the relevant lecture.
Submission Method	Online quiz via Canvas
Assessment Criteria	Auto marked by computer
Return Method	Via Canvas
Feedback Provided	Via Canvas

Assessment 4 - Final Examination

Assessment Type	Formal Examination
Description	A 2-hour online exam.
Weighting	50%
Due Date	Date to be announced within the exam period.
Submission Method	Submit file to Canvas
Assessment Criteria	Correctness of solution, sufficient working to justify solution.
Return Method	Not returned.
Feedback Provided	None

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

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. The University of Newcastle has a Social Media Communication Guideline that covers all communications in the University for staff and students.

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. Recordings of the lectures will also be available.

Discussions: You can ask questions about minor issues on the Discussion forums. Students are strongly encouraged to use these to communicate with each other, discuss issues relating to the course, and solve minor problems.

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. Additional contacts will be available on your Canvas site.

Pathways and Academic Learning Support Centre 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

Student Liaison Officer

PALS-SLO@newcastle.edu.au

Yapug	**Indigenous Enabling Learning Advisor** Hannah Pipe Birabahn Building Ph: 02 4921 7952 Hannah.Pipe@newcastle.edu.au	**Program Convenor** Dan Collins SAS-217, Birabahn Building Ph: 02 4055 3266 Daniel.Collins@newcastle.edu.au

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 including assessment) per semester per 10 unit course.

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

It is strongly recommended that you attend your lectures and tutorials every week. Our data shows that you will get better results if you attend these classes with your peers. If you do have to miss a class, you should catch up on any missed work by accessing lecture recordings and resources available on your Canvas site. **If you cannot attend at least 50% of your tutorials, please contact your Course Coordinator or Student Liaison Officer and discuss the options.**

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.

Timetable

Your timetable for this course is available via the myUni Student Portal and can also be found here.

Software

Free Microsoft Office software is available to enrolled students here and includes 5 TB of free cloud storage with OneDrive.

Written Assessment Word Limits

Word limits for your written assessments includes 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.

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 an 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 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 Circumstances Affecting Assessment Items Procedure. In the Pathways and Academic Learning Support Centre, applications for Adverse Circumstances must be lodged via the online Adverse Circumstances system for all individual assessment items worth 30% or greater.
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. Please refer to the Student Academic Integrity Policy.
Student Support	A wide range of help, advice and support sessions will be available during your studies and emails will be sent throughout the semester as a reminder at key times.
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.
Workplace Health and Safety Requirements	There are no specific WH&S requirements for this course.

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.