Pathways and Academic Learning Support Centre

EPPREP 930: Introduction to Mathematics for Engineering, Science and Technology

Callaghan

Summer 2 - 2024

THE UNIVERSITY OF
NEWCASTLE
AUSTRALIA

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	EPPREP930 is a preparatory course for students intending to commence their undergraduate mathematical studies in MATH1110 Mathematics for Engineering, Science and Technology 1. This course assumes students have previously completed 2 Unit HSC Advanced Mathematics (or equivalent). It revises topics in algebra, graphing, trigonometry, and differential and integral calculus to ensure students entering MATH1110 have an adequate background in those areas.
Academic Progress Requirements	Nil
Requisites	This course is only available to domestic students enrolled in NUPrep Bridging and Refresher [22223].
Assumed Knowledge	2 Unit HSC Advanced Mathematics (or equivalent)
Contact Hours	**Lecture** Face to Face On Campus 2 hour(s) per day for 5 day(s) starting Week 1 **Self-Directed Learning** Self-Directed 1 hour(s) per day for 5 day(s) starting Week 1 It is expected that you will spend at least one hour per day practicing skills and consolidating your learning. **Tutorial** Face to Face On Campus 1 hour(s) per day for 5 day(s) starting Week 1
Unit Weighting	5
Workload	Students are required to spend on average 20 hours of effort (contact and non-contact) including assessments per 5 unit course.

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

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SYLLABUS

Course Content
- Algebra: completing the square, simultaneous equations, negative and fractional indices
- Graphing: polynomials, circles, sine and cosine graphs
- Trigonometry: angles in any quadrant, radians, sine and cosine rules
- Differentiation: definition, common derivatives, algebra of derivatives - product, quotient, chain rules
- Applications of differentiation: tangent lines, dynamics, curve sketching, optimisation problems
- Integration: antidifferentiation (indefinite integrals), exponential growth and decay, definite integrals, area under curves

Course Learning Outcomes

On successful completion of this course, students will be able to:
1. Write algebraic expressions in index form using negative and fractional indices
2. Recognise and graph equations of polynomials, circles, sine and cosine functions
3. Find trig values for angles of any size
4. Convert between degrees and radians
5. Find unknown sides and angles in non right-angled triangles
6. Differentiate any combination of common functions
7. Find equations of tangent lines, relate displacement to velocity and acceleration, find local maxima and minima
8. Antidifferentiate common functions, and use this to find areas of curved regions
9. Solve exponential growth and decay problems

Course Materials
Students will need a scientific calculator. All other course materials will be provided on the course Canvas site. Students are not required to purchase a textbook.

ASSESSMENTS

This course has 5 assessments. Each assessment is described in more detail in the sections below.

	Assessment Name	Due Date	Involvement	Weighting	Learning Outcomes
1	Topics in algebra and graphing	Sunday 25th February 11:59pm	Individual	20%	1
2	Advanced trigonometry	Sunday 25th February 11:59pm	Individual	20%	3, 4, 5
3	Differentiation	Sunday 25th February 11:59pm	Individual	20%	6
4	Applications of differentiation	Sunday 25th February 11:59pm	Individual	20%	7
5	Integration with applications	Sunday 25th February 11:59pm	Individual	20%	8, 9

Late Submissions
Completion of each assessment item is necessary for a pass grade in this course. Extensions of time may be granted in consultation with your Course Coordinator.

Assessment 1 - Topics in algebra and graphing

Assessment Type	Quiz
Description	10 questions
Weighting	20%
Due Date	Sunday 25th February 11:59pm
Submission Method	Online
Assessment Criteria	Correct answers
Return Method	Online
Feedback Provided	Marks will be provided in Canvas upon completion of the quiz. Further feedback can be requested by contacting the Course Coordinator.

Assessment 2 - Advanced trigonometry

Assessment Type	Quiz
Description	10 questions
Weighting	20%
Due Date	Sunday 25th February 11:59pm
Submission Method	Online
Assessment Criteria	Correct answers
Return Method	Online
Feedback Provided	Marks will be provided in Canvas upon completion of the quiz. Further feedback can be requested by contacting the Course Coordinator

Assessment 3 - Differentiation

Assessment Type	Quiz
Description	10 questions
Weighting	20%
Due Date	Sunday 25th February 11:59pm
Submission Method	Online
Assessment Criteria	Correct answers
Return Method	Online
Feedback Provided	Marks will be provided in Canvas upon completion of the quiz. Further feedback can be requested by contacting the Course Coordinator

Assessment 4 - Applications of differentiation

Assessment Type	Quiz
Description	10 questions
Weighting	20%
Due Date	Sunday 25th February 11:59pm
Submission Method	Online
Assessment Criteria	Correct answers
Return Method	Online
Feedback Provided	Marks will be provided in Canvas upon completion of the quiz. Further feedback can be requested by contacting the Course Coordinator

Assessment 5 - Integration with applications

Assessment Type	Quiz
Description	10 questions
Weighting	20%
Due Date	Sunday 25th February 11:59pm
Submission Method	Online
Assessment Criteria	Correct answers
Return Method	Online
Feedback Provided	Marks will be provided in Canvas upon completion of the quiz. Further feedback can be requested by contacting the Course Coordinator

ADDITIONAL INFORMATION

Grading Scheme   This course is graded as follows:

Grade	Description
Ungraded Pass (UP)	There are no marks associated with this result and you have met the level requirements to pass the course.
Fail (FF)	Failure to satisfactorily achieve assessment objectives or compulsory course requirements. 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. The University of Newcastle has a Code of Conduct 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 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.

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.

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.

Workplace Health and Safety Requirements

There are no specific WH&S requirements for this course.

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.

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.

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.