

Unit Outline
MATH1017 Advanced Calculus 1
Semester 1, 2024

Unit study package code:	MATH1017										
Mode of study:	Internal										
Tuition pattern summary:	<p>Note: For any specific variations to this tuition pattern and for precise information refer to the Learning Activities section.</p> <p>Lecture: 2 x 2 Hours Weekly Workshop: 1 x 2 Hours Weekly</p> <p>This unit does not have a fieldwork component.</p>										
Credit Value:	25.0										
Pre-requisite units:	Nil										
Co-requisite units:	Nil										
Anti-requisite units:	<p>MATH1004 (v.0) Mathematics 1 or any previous version <i>AND</i> MATH1010 (v.0) Advanced Mathematics or any previous version <i>AND</i> MATH1015 (v.0) Linear Algebra 1 or any previous version <i>AND</i> MATH1016 (v.0) Calculus 1 or any previous version <i>AND</i> MATH1019 (v.0) Linear Algebra and Statistics for Engineers or any previous version <i>AND</i> MATH1020 (v.0) Calculus for Engineers or any previous version <i>AND</i> MATH1021 (v.0) Accelerated Mathematics for Engineers or any previous version</p>										
Result type:	Grade/Mark										
Approved incidental fees:	<p>Information about approved incidental fees can be obtained from our website. Visit https://www.curtin.edu.au/students/essentials/fees/understanding-your-fees/ for details.</p>										
Unit coordinator:	<table><tr><td>Title:</td><td>Associate Professor</td></tr><tr><td>Name:</td><td>Lorenzo Ntogramatzidis</td></tr><tr><td>Phone:</td><td>08 9266 3143</td></tr><tr><td>Email:</td><td>L.Ntogramatzidis@curtin.edu.au</td></tr><tr><td>Location:</td><td>Building: 314 - Room: 457</td></tr></table>	Title:	Associate Professor	Name:	Lorenzo Ntogramatzidis	Phone:	08 9266 3143	Email:	L.Ntogramatzidis@curtin.edu.au	Location:	Building: 314 - Room: 457
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Teaching Staff:											

Administrative contact:	Name:	EECMS Teaching Support
	Phone:	N/A
	Email:	EECMS-TeachingSupport@curtin.edu.au
	Location:	Building: Building: Building: 314 - Room: Level 3 - Reception

Learning Management System: [Blackboard](https://lms.curtin.edu.au) (lms.curtin.edu.au)

Acknowledgement of Country

We respectfully acknowledge the Indigenous Elders, custodians, their descendants and kin of this land past and present. The [Centre for Aboriginal Studies](#) aspires to contribute to positive social change for Indigenous Australians through higher education and research.

Coronavirus (COVID-19) Update

Curtin University is committed to supporting all our students and staff whether they are on campus, working remotely or overseas. Your health, safety and wellbeing are our priority and the continuing COVID-19 pandemic may require changes to the unit schedule, learning activities, delivery modes and assessment to provide flexible and safe options to our community. Curtin will endeavour to keep changes and disruptions to a minimum at all times. For current advice and further information visit <https://www.curtin.edu.au/novel-coronavirus/>.

Syllabus

This unit builds on students' knowledge of calculus and linear algebra, further extending to a range of techniques and used in solving problems arising from science, engineering and business related fields. Students will extend their differentiation skills to consider a broader range of functions, and will apply their differentiation techniques to approximation and finding Taylor series. This unit will cover a range of integration techniques, and students will apply these to determine several physical properties and applications. Students will extend their previous work on vectors, lines and planes into general n-dimension space and the study of vector spaces. This unit also covers matrices and their use for solving systems of linear equations through a study of a number of different types of solution methods, as well as the calculation and application of eigenvalues and eigenvectors. This unit is designed for those students who have passed WACE Mathematics Specialist ATAR or equivalent, with a mark of 70% or greater.











Introduction

This unit covers various advanced techniques for multivariable and differential calculus. It is a core unit for a number of undergraduate courses in the Faculty of Science and Engineering. Please verify with your course coordinator regarding the core units in your course. If you are taking this unit as a required (core) unit in your course of study, you may be terminated from your course of study if you fail this unit twice.







Unit Learning Outcomes

All graduates of Curtin University achieve a set of six Graduate Capabilities during their course of study. These inform an employer that, through your studies, you have acquired discipline knowledge and a range of other skills and capabilities which employers would value in a professional setting. Each unit in your course addresses the Graduate Capabilities through a clearly identified set of learning outcomes. They form a vital part in the process referred to as assurance of learning. The learning outcomes notify you of what you are expected to know, understand or be able to do in order to be successful in this unit. Each assessment for this unit is carefully designed to test your knowledge of one or more of the unit learning outcomes. On successfully completing all of the assessments you will have achieved all of these learning outcomes.

Your course has been designed so that on graduating you will have achieved all of Curtin's Graduate Capabilities through the assurance of learning processes in each unit.

On successful completion of this unit students can:		Graduate Capabilities addressed
1	Apply differential and integral calculus techniques to solve a range of problems	  
2	Demonstrate a variety of techniques for solving problems on lines, planes and general vector spaces	  
3	Analyse systems of linear algebraic equations using a variety of matrix properties	 
4	Justify the appropriate techniques to apply to solve a range of problems	 

Curtin's Graduate Capabilities

	Apply discipline knowledge, principles and concepts		Innovative, creative and entrepreneurial		Effective communicators with digital competency
	Globally engaged and responsive		Culturally competent to engage respectfully with local First Peoples and other diverse cultures		Industry connected and career capable

Find out more about Curtin's Graduate Capabilities at the Learning Innovation and Teaching Excellence Centre (LITEC) website: litec.curtin.edu.au

Learning Activities

See Additional Information Document uploaded in Blackboard.

Learning Resources

Assessment

Assessment policy exemptions

- There are no exemptions to the assessment policy

Assessment schedule

	Task	Value %	Date Due	Unit Learning Outcome(s) Assessed	Late Assessments Accepted?*	Assessment Extensions Considered?*
1	Test 1	50%	Week: 7 Day: Friday, April 12, 2024 Time: 17:00 to 19:00	1,2,3,4	Yes	Yes
2	Test 2	50%	Week: 13 Day: Friday, May 24 Time: 17:00 to 19:00	1,2,4	No	No

*Please refer to the Late Assessment and the Assessment Extension sections below for specific details and conditions.

Detailed information on assessment tasks

1. Information in Additional Information Document uploaded in Blackboard

2. Information in Additional Information Document uploaded in Blackboard

Pass requirements

To pass the unit, a student must get at least 50% in each of the two tests.

Assessment Moderation

Fair assessment through moderation

Moderation describes a quality assurance process to ensure that assessments are appropriate to the learning outcomes, and that students work is evaluated consistently by assessors. Minimum standards for the moderation of assessments are described in the Assessment and Student Progression Manual, available from policies.curtin.edu.au/findapolicy/

Pre-marking moderation

Curtin policy on pre-marking moderation will be followed.

Intra-marking / Post-marking moderation

Curtin policy on intra-marking and post-marking moderation will be followed.

Late assessment

Where the submission of a late assessment is permitted, late penalties will be consistently applied in this unit.

Where a late assessment **is** permitted for an assessment item or the entirety of the unit (refer to the Assessment Schedule table in this Unit Outline) and the student does not have an approved assessment extension:

1. For assessment items submitted within the first 24 hours after the due date/time, students will be penalised by a deduction of 5% of the total marks allocated for the assessment task;
2. For each additional 24 hour period commenced an additional penalty of 10% of the total marks allocated for the assessment item will be deducted; and
3. Assessment items submitted more than 168 hours late (7 calendar days) will receive a mark of zero.

Where late assessment **is NOT** permitted for an assessment item or the entirety of the unit (refer to the Assessment Schedule table in this Unit Outline) and the student does not have an approved assessment extension:

1. All assessment items submitted after the due date/time will receive a mark of zero.

Assessment extension

Where an application for an assessment extension **is** permitted for an assessment item(s) within this unit (refer to the Assessment Schedule table in this Unit Outline):

1. A student who is unable to complete an assessment item by/on the due date/time as a result of exceptional circumstances beyond the student's control, may apply for an assessment extension on the Assessment Extension Application Form as prescribed by the Academic Registrar. The form is available on the Forms page at <https://students.curtin.edu.au/essentials/forms-documents/forms/> and also within the student's OASIS (My Studies tab – Quick Forms) account.
2. The student will be expected to submit their application for an Assessment Extension with supporting documentation [via the online form](#).
3. Timely submission of this information supports the assessment process. For applications that are declined, delayed submission may have significant ramifications on the possible marks awarded.
4. An application may be accepted up to five working days after the due date/time of the assessment item where the student is able to provide a verifiable explanation as to why they were not able to submit the application prior to the assessment due date/time

Where an application for an assessment extension **is NOT** permitted for an assessment item(s) within this unit (refer to the Assessment Schedule table in this Unit Outline):

1. All assessment items submitted after the due date/time will be subject to late penalties or receive a mark of zero depending on the unit permitting late assessment submissions.

Deferred assessments

If your results show that you have been granted a deferred assessment you should immediately check OASIS for details.

Deferred examinations/tests will be held from 29/05/2024 to 29/05/2024 . Notification to students will be made after the Board of Examiners' meeting via the Official Communications Channel (OCC) in OASIS.

Further assessment

Further assessments, if granted by the Board of Examiners, will be held between 29/05/2024 and 29/05/2024 . Notification to students will be made after the Board of Examiners meeting via the Official Communications Channel in OASIS.

It is the responsibility of the student to be available to complete the requirements of a further assessment. If your results show that you have been granted a further assessment you should immediately check OASIS for details.

Reasonable adjustments for students with disabilities/health circumstances likely to impact on studies

A [Curtin Access Plan](#) (CAP) is a document that outlines the type and level of support required by a student with a disability or health condition to have equitable access to their studies at Curtin. Carers for people with disability may also be eligible for support. This support can include alternative exam or test arrangements, study materials in accessible formats, access to Curtin's facilities and services or other support as discussed with an advisor from [AccessAbility Services](#).

Documentation is required from your treating Health Professional to confirm your health circumstances or carer responsibilities.

If you think you may be eligible for a CAP, please contact AccessAbility Services. If you already have a CAP please provide it to the Unit Coordinator in week 1 of each study period.

Referencing style

The referencing style for this unit is Chicago 17th Author-Date.

More information can be found on this style from the Library web site:

<https://libguides.library.curtin.edu.au/uniskills/referencing/chicago17>.

Privacy

As part of a learning or assessment activity, or class participation, your image or voice may be recorded or transmitted by equipment and systems operated by Curtin University. Transmission may be to other venues on campus or to others both in Australia and overseas.

Your image or voice may also be recorded by students on personal equipment for individual or group study or assessment purposes. Such recordings may not be reproduced or uploaded to a publicly accessible web environment. If you wish to make such recordings for study purposes as a courtesy you should always seek the permission of those who are impacted by the recording.

Recording of classes or course materials may not be exchanged or distributed for commercial purposes, for compensation, or for any other purpose other than personal study for the enrolled students in the unit. Breach of this may subject a student to disciplinary action under Statute No 10 – Student Disciplinary Statute.

If you wish to discuss this please talk to your Unit Coordinator.

Copyright

The course material for this unit is provided to you for your own research and study only. It is subject to copyright. It is a copyright infringement to make this material available on third party websites without the express written consent of Curtin University.

Academic Integrity (including plagiarism and cheating)

Academic Integrity

Curtin's [Student Charter](#), [Academic Integrity Program \(AIP\)](#), and core [Values](#) guide expectations regarding student behaviour and responsibilities. Information on these topics can be found on the [Academic Integrity Website](#).

Academic Integrity Warnings

An [Academic Integrity Warning](#) may be issued to a student in limited circumstances and only where misconduct is not involved.

Academic Misconduct

Staff members are required to report [poor academic practice](#) and suspected misconduct. [Academic Misconduct](#) means conduct by a student that is dishonest or unfair in connection with any academic work. This includes all types of plagiarism, cheating, collusion, falsification or fabrication of content, and behaviours like falsifying medical certificates for extension. [Contract cheating](#), the use of file sharing, translation services/apps, paraphrasing tools (text-spinners), article generators, and assignment help websites also may be considered academic misconduct.

Check your assessment instructions carefully before using any generative artificial intelligence (Gen-AI) software (e.g. Chat GPT, Midjourney, GitHub Copilot, etc.). You are not permitted to use Gen-AI software in any assessment task unless written permission is explicitly granted by the Unit Coordinator (e.g. within Blackboard or the assignment specifications). If the use of Gen-AI software has been approved, you must document its use, apply appropriate acknowledgement and attribution rules, and include a statement as to the nature and extent of the use when submitting the assessment. Unapproved, inappropriate, or undisclosed use may be dishonest or unfair behaviour, and thus considered misconduct. For further information on the use of Gen-AI software see the [Academic Integrity Website](#).

The longer term personal, social, and financial consequences of misconduct can be severe, so please ask your tutors or unit coordinator if you need clarification or are unsure what to do. If your work is the subject of an inquiry, you will be given an opportunity to respond and appropriate support will be provided. Academic work under inquiry will not be graded until the process has concluded. Penalties for misconduct may include a warning, a reduced or nil grade, a requirement to repeat the assessment, an annulled grade (ANN) or termination from the course. For more information refer to [Statute No.10 Student Discipline and Academic Misconduct Rules](#).

Information and Communications Technology (ICT) Expectations

Curtin students are expected to have reliable internet access in order to connect to OASIS email and learning systems such as Blackboard and Library Services.

You may also require a computer or mobile device for preparing and submitting your work.

For general ICT assistance, in the first instance please contact OASIS Student Support:

oasisapps.curtin.edu.au/help/general/support.cfm

For specific assistance with any of the items listed below, please visit [UniSkills](#) and the [IT tools and guides](#) webpage.

- Using Blackboard, the I Drive and Back-Up files
- Introduction to PowerPoint, Word and Excel

Additional information

Enrolment

It is your responsibility to ensure that your enrolment is correct - you can check your enrolment through the eStudent option on OASIS, where you can also print an Enrolment Advice.

Student Rights and Responsibilities

It is the responsibility of every student to be aware of all relevant legislation, policies and procedures relating to their rights and responsibilities as a student. These include:

- the Student Charter
- Values and Signature Behaviours
- the University's policy and statements on plagiarism and academic integrity
- copyright principles and responsibilities
- the University's policies on appropriate use of software and computer facilities

Information on all of the above is available through the University's "Student Rights and Responsibilities" website at: students.curtin.edu.au/rights.

Note: In Australia and other jurisdictions, students are required to complete a screening check prior to undertaking any activities that include children (e.g. surveying children at a school as part of a project). If this applies to you, start by contacting your unit coordinator for advice.

Student Equity

There are a number of factors that might disadvantage some students from participating in their studies or assessments to the best of their ability, under standard conditions. These factors may include a disability or medical condition (e.g. mental illness, chronic illness, physical or sensory disability, learning disability), significant caring responsibilities, pregnancy, religious practices, living in a remote location, or another reason. If you believe you may be unfairly disadvantaged on these or other grounds please contact the appropriate service below. It is important to note that the staff of the University may not be able to meet your needs if they are not informed of your individual circumstances, so please get in touch with the appropriate service if you require assistance.

To discuss your needs in relation to:

- Disability or medical conditions, contact AccessAbility Services: <https://students.curtin.edu.au/personal-support/disability/>
- Elite athletes, contact Elite Athlete Coordinator: <https://stadium.curtin.edu.au/sport/academy/elite-athlete-program/>
- All other grounds, contact the Student Wellbeing Advisory Service: <https://students.curtin.edu.au/personal-support/counselling-guidance/wellbeing/>

Recent Unit Changes & Response to Student Feedback

Students are encouraged to provide feedback through student surveys (such as [Insight](#) (Curtin's new unit and teaching survey developed in collaboration with students and staff) and the annual [Student Experience Survey](#)) and interactions with teaching staff.

Listed below are some recent changes to the unit as a result of student feedback.

Information on Additional Information Document uploaded in Blackboard.

Program calendar

Information on Additional Information Document uploaded in Blackboard.