Unit Outline

MATH1007 Pre and Introductory Calculus
Semester 1, 2016

Unit study package code: MATH1007
Mode of study: Internal
Tuition pattern summary: Note: For any specific variations to this tuition pattern and for precise information refer to the Learning Activities section.
- Lecture: 1 x 3 Hours Weekly
- Workshop: 1 x 1 Hours Weekly
This unit does not have a fieldwork component.
Credit Value: 25.0
Pre-requisite units: Nil
Co-requisite units: Nil
Anti-requisite units:
- 10926 (v.0) Mathematics 103 or any previous version
- AND
- 305640 (v.0) Mathematics 136 or any previous version
- AND
- 7062 (v.0) Mathematics 101 or any previous version
- AND
- 7492 (v.0) Mathematics 104 or any previous version
- AND
- MATH1004 (v.0) Mathematics 1 or any previous version
- AND
- MATH1008 (v.0) Calculus and Linear Algebra or any previous version
- AND
- MATH1010 (v.0) Advanced Mathematics or any previous version
- AND
- MATH1011 (v.0) Mathematics 2 or any previous version
Result type: Grade/Mark
Approved incidental fees: Information about approved incidental fees can be obtained from our website. Visit fees.curtin.edu.au/incidental_fees.cfm for details.
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Acknowledgement of Country
We respectfully acknowledge the Indigenous Elders, custodians, their descendants and kin of this land past and present.

Syllabus
Basic algebra: transposition of formulae, indices, solution of equations, Trigonometry. Functions: polynomials, exponential, logarithmic, trigonometric, transformations and inverse. Differential calculus: limits, continuity and differentiation rules. Matrices. This unit is designed for those students who have passed WACE Mathematics 2C/2D. Students who have passed WACE Mathematics 3A/3B should enrol in MATH1008 Calculus and Linear Algebra. Those that have passed WACE Mathematics 3C/3D should enrol in MATH1004 Mathematics 1 and those that have passed WACE Mathematics: Specialist 3C/3D with a mark of >65% should enrol in MATH1010 Advanced Mathematics.

Introduction
On successful completion of this unit you will be able to: On successful completion of this unit, students will be competent in the manipulations necessary to solve basic algebraic problems. Students will understand how natural and physical phenomena can be modelled by mathematical functions and will be equipped to study relationships between variables as described by these models, including an understanding of the relationship between their analytical and graphical representations. They will be able to understand applications involving calculus and applications that relate to basic geometric problems.

Unit Learning Outcomes
All graduates of Curtin University achieve a set of nine graduate attributes during their course of study. These tell an employer that, through your studies, you have acquired discipline knowledge and a range of other skills and attributes which employers say would be useful in a professional setting. Each unit in your course addresses the graduate attributes 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 tell you 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 achievement 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 we can say you will have achieved all of Curtin’s Graduate Attributes through the assurance of learning process in each unit.

<table>
<thead>
<tr>
<th>On successful completion of this unit students can:</th>
<th>Graduate Attributes addressed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Demonstrate manipulations necessary to solve basic algebraic problems</td>
<td>🌟🌟🌟🌟</td>
</tr>
<tr>
<td>2 Explain how natural and physical phenomena can be modelled by mathematical functions</td>
<td>🌟🌟🌟🌟</td>
</tr>
<tr>
<td>3 Explain the relationship between variables as described by both analytical and graphical representations</td>
<td>🌟🌟🌟🌟</td>
</tr>
<tr>
<td>4 Use calculus to determine solutions to simple optimisation problems</td>
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</tbody>
</table>

Curtin’s Graduate Attributes

| 🌟 | Apply discipline knowledge |
| ☑️ | Thinking skills (use analytical skills to solve problems) |
| ☑️ | Information skills (confidence to investigate new ideas) |
| ☑️ | Communication skills |
| ☑️ | Technology skills |
| ☑️ | Learning how to learn (apply principles learnt to new situations) (confidence to tackle unfamiliar problems) |
| ☑️ | International perspective (value the perspectives of others) |
| ☑️ | Cultural understanding (value the perspectives of others) |
| ☑️ | Professional Skills (work independently and as a team) (plan own work) |

Find out more about Curtin’s Graduate attributes at the Office of Teaching & Learning website: ctl.curtin.edu.au

Learning Activities
Lectures. Workshops and Tutorials Online quizzes: Online quizzes. There are at least 11 online quizzes each will open as we complete a topic and close when we have had ample time to complete. The purpose of the quizzes is to instill regular work habits. There are hints on how to get the most out of the quizzes in “Online quiz Info” (in Blackboard). You will also be given hints in class.
Learning Resources

Other resources

Lecture Notes. Exercise Sheets. Online Quiz Links & Information. A Mail Tool to Contact your Lecturer. LMS (Blackboard): Support materials will be under Unit Materials. It will also be used for discussions and electronic correspondence. The address is http://lms.curtin.edu.au. Blackboard also provides a link to the Online Quizzes. There are many introductory calculus and precalculus text books that cover the work for this unit. The text recommended below is the one I am using; it is also the text used for M1008. If you see a 2nd hand copy that is not the latest edition that is fine. Recommended Reference not essential: Lial, Greenwell & Ritchey, Calculus with Applications Tables and Formulae - Mathematical Formulae and Statistical Tables for Tertiary Institutions

Assessment

Assessment schedule

<table>
<thead>
<tr>
<th>Task</th>
<th>Value %</th>
<th>Date Due</th>
<th>Unit Learning Outcome(s) Assessed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test 1</td>
<td>10 percent</td>
<td>Week: Weekly beginning week 1 Day: as per instruction Time: as per instruction</td>
<td>1,4</td>
</tr>
<tr>
<td>Test 2</td>
<td>20 percent</td>
<td>Week: Teaching week 5 Day: Friday the 8th of April Time: 11-00 during the lecture</td>
<td>1,2,3</td>
</tr>
<tr>
<td>Test 3</td>
<td>20 percent</td>
<td>Week: Teaching Week 8 Day: Friday 6th May Time: During Lecture 11-00</td>
<td>1,2,3</td>
</tr>
<tr>
<td>Final Exam</td>
<td>50 percent</td>
<td>Week: Centrally Scheduled During University Exam Period Day: Centrally Scheduled Time: Centrally Scheduled</td>
<td>1,3,4</td>
</tr>
</tbody>
</table>

Detailed information on assessment tasks

1. Assessment task one begins as we finish the first topic and consists of online quizzes for each topic where student will be awarded a mark out of ten for the semester's work.

2. Assessment task two will test the work covered in topics (teaching topics from unit calender) 1, 2 and 3and 4. The test will be closed book with students having to supply a scientific calculator. Any notes needed will be supplied by the lecturer and made available for download on BlackBoard. The duration of the test will be at most 50 minutes

3. Assessment task two will test the work covered in topics (teaching topics from unit calender) 4, 5 and 6. The test will be closed book with students having to supply a scientific calculator. Any notes needed will be supplied by the lecturer and made available for download on BlackBoard. The duration of the test will be at most 50 minutes

4. Assessment task four will test the work covered in topics 1 to 12. Students to supply a scientific calculator and an A4 page of notes (double-sided) and the university will supply a tables Book. The duration of the exam will be at most 120 minutes plus 10 minutes reading time
Pass requirements
To pass the unit student require 50% overall with a minimum of 40% in the final exam.

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

Late assessment policy
This ensures that the requirements for submission of assignments and other work to be assessed are fair, transparent, equitable, and that penalties are consistently applied.

1. All assessments students are required to submit will have a due date and time specified on this Unit Outline.
2. Late submission of assessments is not accepted in this unit. Students will receive a zero mark for any assessment item submitted late.

Assessment extension
A student unable to complete an assessment task by/on the original published date/time (eg examinations, tests) or due date/time (eg assessments) must apply for an assessment extension using the Assessment Extension form (available from the Forms page at students.curtin.edu.au/administration/) as prescribed by the Academic Registrar. It is the responsibility of the student to demonstrate and provide evidence for exceptional circumstances beyond the student's control that prevent them from completing/submitting the assessment task.

The student will be expected to lodge the form and supporting documentation with the unit coordinator before the assessment date/time or due date/time. An application may be accepted up to five working days after the date or due date of the assessment task where the student is able to provide an acceptable explanation as to why he or she was not able to submit the application prior to the assessment date. An application for an assessment extension will not be accepted after the date of the Board of Examiners' meeting.

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

Deferred examinations/tests will be held from 18/07/2016 to 22/07/2016. Notification to students will be made after the Board of Examiners’ meeting via the Official Communications Channel (OCC) in OASIS.

Supplementary assessments
Supplementary assessments, if granted by the Board of Examiners, will have a due date or be held between 18/07/2016 and 22/07/2016. Notification to students will be made after the Board of Examiners’ meeting via the Official Communications Channel (OCC) in OASIS.

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

Referencing style
The referencing style for this unit is Chicago.

More information can be found on this style from the Library web site: http://libguides.library.curtin.edu.au/referencing.

Copyright
© Curtin University. 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.

Academic Integrity (including plagiarism and cheating)
Any conduct by a student that is dishonest or unfair in connection with any academic work is considered to be academic misconduct. Plagiarism and cheating are serious offences that will be investigated and may result in penalties such as reduced
or zero grades, annulled units or even termination from the course.

Plagiarism occurs when work or property of another person is presented as one's own, without appropriate acknowledgement or referencing. Submitting work which has been produced by someone else (e.g. allowing or contracting another person to do the work for which you claim authorship) is also plagiarism. Submitted work is subjected to a plagiarism detection process, which may include the use of text matching systems or interviews with students to determine authorship.

Cheating includes (but is not limited to) asking or paying someone to complete an assessment task for you or any use of unauthorised materials or assistance during an examination or test.

From Semester 1, 2016, all incoming coursework students are required to complete Curtin's Academic Integrity Program (AIP). If a student does not pass the program by the end of their first study period of enrolment at Curtin, their marks will be withheld until they pass. More information about the AIP can be found at: https://academicintegrity.curtin.edu.au/students/AIP.cfm

Refer to the Academic Integrity tab in Blackboard or academicintegrity.curtin.edu.au for more information, including student guidelines for avoiding plagiarism.

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.

Access to an internet connected computer is essential to obtain materials fro BlackBoard and to complete online quizzes.

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 contact The Learning Centre: life.curtin.edu.au/learning-support/learning_centre.htm

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

Additional information

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.

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
- the University's Guiding Ethical Principles
- 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 these things is available through the University's "Student Rights and Responsibilities" website at: students.curtin.edu.au/rights.
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 family 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 Student Equity at eesj@curtin.edu.au or go to http://eesj.curtin.edu.au/student_equity/index.cfm for more information.

You can also contact Counselling and Disability services: http://www.disability.curtin.edu.au or the Multi-faith services: http://life.curtin.edu.au/health-and-wellbeing/about_multifaith_services.htm for further information.

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. For general wellbeing concerns or advice please contact Curtin’s Student Wellbeing Advisory Service at: http://life.curtin.edu.au/health-and-wellbeing/student_wellbeing_service.htm

Recent unit changes

Students are encouraged to provide unit feedback through eVALUate, Curtin’s online student feedback system. For more information about eVALUate, please refer to evaluate.curtin.edu.au/info/.

To view previous student feedback about this unit, search for the Unit Summary Report at https://evaluate.curtin.edu.au/student/unit_search.cfm. See https://evaluate.curtin.edu.au/info/dates.cfm to find out when you can eVALUate this unit.

Recent changes to this unit include:
No Recent Changes
# Program calendar

| Topics | 
|--------|---|
| 1 | Real numbers, Algebraic expressions. Solving equations. |
| 2 | Solving equations & inequalities. |
| 3 | Linear and quadratic equations and their graphs. |
| 4 | Solving quadratics & other polynomial equations including factorizing and completing the square; Exponents and radicals |
| 5 | Exponential and logarithmic expressions. Solving exponential and logarithmic equations. (TEST WEEK) |
| 6 | Rational expressions. Introduction to differential calculus and tangent lines. |
| 7 | More differentiation (simple optimization). |
| 8 | Trigonometry of the triangle. (TEST WEEK) |
| 9 | Trig functions and their graphs and basic identities. |
| 10 | Introduction to integral calculus. |
| 11 | Definite integrals. |
| 12 | Area between curves. |