



Unit Outline (Higher Education)

Institute / School:	Institute of Innovation, Science & Sustainability
Unit Title:	MODELLING AND CHANGE (INTRODUCTORY LEVEL)
Unit ID:	MATHS1001
Credit Points:	15.00
Prerequisite(s):	Nil
Co-requisite(s):	Nil
Exclusion(s):	(MA551)
ASCED:	010101

Description of the Unit:

This unit is aimed at a broad tertiary level audience interested in solving real world problems. The main focus will be on learning and applying standard calculus techniques to model motion, growth and change. Problems requiring optimisation techniques and calculation of area will also be considered. It will be particularly valuable to prospective secondary school mathematics teachers and any student interested in improving their understanding of these commonly encountered areas of applied mathematics.

Grade Scheme: Graded (HD, D, C, P, MF, F, XF)

Work Experience:

No work experience: Student is not undertaking work experience in industry.

Placement Component: No

Supplementary Assessment: Yes

Where supplementary assessment is available a student must have failed overall in the Unit but gained a final mark of 45 per cent or above, has completed all major assessment tasks (including all sub-components where a task has multiple parts) as specified in the Unit Description and is not eligible for any other form of supplementary assessment

Course Level:

Level of Unit in Course	AQF Level of Course					
	5	6	7	8	9	10
Introductory	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Intermediate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Level of Unit in Course	AQF Level of Course					
	5	6	7	8	9	10
Advanced	■	■	■	■	■	■

Learning Outcomes:

Knowledge:

- K1.** Describe the mathematical properties of functions
- K2.** Explain fundamental calculus techniques
- K3.** Describe how fundamental calculus techniques are related

Skills:

- S1.** Illustrate important features of functions using graphs
- S2.** Calculate the limit and derivative of functions
- S3.** Determine the general antiderivative of functions
- S4.** Evaluate definite and indefinite integrals
- S5.** Determine the area between curves and the volume of a solid using integration
- S6.** Utilise appropriate technology to assist in the solution and investigation of problems

Application of knowledge and skills:

- A1.** Apply differentiation and integration techniques to solve physical applications
- A2.** Interpret the results produced by a model to help solve real world problems

Unit Content:

Topics in this unit may include an introduction to the concepts of mathematical modelling and functions, calculus, trigonometry and optimisation through the use of real world problems.

Learning Task and Assessment:

Learning Outcomes Assessed	Assessment Tasks	Assessment Type	Weighting
K1-K3; S1-S6; A1-A2	A range of tasks and problems explored individually or in groups to support the understanding of the content and the development of skills and knowledge throughout the unit.	Projects/presentation/assignments/quizzes	40 - 50%
K1-K2, S1-S5, A1	A test and/or examination on any part of or all the material covered in the unit.	Test(s)/Examination(s)	50 - 60%

Adopted Reference Style:

APA

Refer to the [library website](#) for more information

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