



Unit Outline (Higher Education)

Institute / School:	Institute of Innovation, Science & Sustainability
Unit Title:	INTRODUCTION TO MATHEMATICS: PRINCIPLES AND TECHNIQUES
Unit ID:	MATHS1101
Credit Points:	15.00
Prerequisite(s):	Nil
Co-requisite(s):	Nil
Exclusion(s):	(MATHS1000)
ASCED:	010101

Description of the Unit:

This unit allows students to build conceptual understanding and see the relevance of mathematics in a scientific and technical context. Various concepts and techniques in elementary mathematics that will equip students for further mathematical and technical units will be introduced/reviewed. The unit would be particularly valuable to students interested in improving their understanding of basic mathematical principles and techniques and to prospective teachers of mathematics at primary and secondary level.

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.** Understand how basic mathematical techniques can be used to solve problems in various scientific and technical contexts.
- K2.** Identify, describe and explain the nature and properties of various mathematical functions and graphs
- K3.** Understand basic concepts of probability and set theory

Skills:

- S1.** Manipulate and rearrange algebraic expressions
- S2.** Solve simultaneous equations
- S3.** Analyse functions using their graphs
- S4.** Perform basic operations on matrices and vectors
- S5.** Apply basic geometry and trigonometry to solve practical problems
- S6.** Use mathematical software to solve various mathematical problems

Application of knowledge and skills:

- A1.** Model and analyse physical phenomena using mathematical constructs

Unit Content:

Topics may include:

- Elementary algebra
- Elementary functions and their graphs
- Elementary geometry
- Trigonometry
- Basic notions of linear algebra
- Basic probability
- Basic set theory
- Basic mathematical logic

Learning Task and Assessment:

Learning Outcomes Assessed	Assessment Tasks	Assessment Type	Weighting
K1-K2; S1-S6, A1	Participate in class activities; use mathematical software	Portfolio of completed work	10-30%
K1-K3; S1-S6; A1	Self-directed or group exploration; problem solving	Assignment/Project/Presentation	10-30%
K1-K3; S1-S5	Review and skills practice	Test/Examination	40-60%

Adopted Reference Style:

APA

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

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