

Course Outline (Higher Education)

School:	School of Science, Engineering and Information Technology
Course Title:	UPON THE SHOULDERS OF GIANTS
Course ID:	MATHS1000
Credit Points:	15.00
Prerequisite(s):	(VCE Mathematics or equivalent)
Co-requisite(s):	Nil
Exclusion(s):	(ENCOR1015 and MATHS2000 and SCCOR1300)
ASCED Code:	010101

Description of the Course :

This course allows students to see the relevance of mathematics in scientific and technical practice, with a historical overview of the development of mathematical thought. Various concepts and techniques in elementary mathematics that will equip students for further mathematical and technical courses will be introduced/reviewed. The course would be particularly valuable to prospective teachers of mathematics at primary and secondary level and to students interested in improving their understanding of basic mathematical principles and techniques.

Grade Scheme: Graded (HD, D, C, etc.)

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 course but gained a final mark of 45 per cent or above and submitted all major assessment tasks..

Program Level:

AQF Level of Program						
	5	6	7	8	9	10
Level						
Introductory	<input type="checkbox"/>	<input 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"/>
Advanced	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Learning Outcomes:

Knowledge:

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- K1.** Describe the development of the concept of number.
- K2.** Explain the structure of numbers.
- K3.** Outline the historical development of sets and functions as ways of describing mathematical entities.
- K4.** Discuss some of the historical underpinnings of Euclidean geometry and its applications.
- K5.** Describe the significance and evolution of the idea of 'chance'.

Skills:

- S1.** Perform calculations, using appropriate technology, to investigate number properties.
- S2.** Perform algebraic manipulations, including factorisation and solution of quadratics.
- S3.** Describe relations and functions and related ideas.
- S4.** Find the sum of arithmetic and geometric series.

Application of knowledge and skills:

- A1.** Use ideas about sets and their properties in problem solving.
- A2.** Discuss the significance of mathematicians' work in the context of their lives and times.
- A3.** Present mathematical knowledge to other student.

Course Content:

Topics in this course may include an introduction to the concepts of number, function, probability and geometry through a guided exploration of the development of these ideas from an historical perspective. Throughout the course, the ideas will be developed using practical applications. Topics to be covered in this course will be taken from the following: early number systems and symbols, geometry and arithmetic from the early civilizations, the development of number theory and foundations of algebra, solving equations, geometry and trigonometry, geography and navigation, astronomy and trigonometry, combinatorics, logarithms, kinematics, sequences and series, probability and statistics, the foundations of calculus, the beginning of structure - groups, rings and fields, set theory, analysis and topology.

Topics may include:

- The changing concept of number in the development of society.
- The contribution made by different cultures to the development of mathematics.
- Concepts in algebra, trigonometry and geometry.
- The development and application of calculus.
- Mathematical models for the real world using functions, relations and sets.
- Ideas in geometry that influence the world in which we live.
- Concepts of probability with a discussion of historical and contemporary applications.

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- The historical context underpinning the development of mathematical topics found in typical school curricula.

Values:

- V1.** Appreciate the rigour of formal mathematical proof.
- V2.** Appreciate the extent of mathematical ideas from the 19th and 20th centuries.

Graduate Attributes:

FedUni graduate attributes statement. To have graduates with knowledge, skills and competence that enable them to stand out as critical, creative and enquiring learners who are capable, flexible and work ready, and responsible, ethical and engaged citizens.

Attribute	Brief Description	Focus
Knowledge, skills and competence	Research required for presentation and essay.	Medium
Critical, creative and enquiring learners	Research required for presentation and essay.	Medium
Capable, flexible and work ready	This course gives an appreciation of important aspects of the history of our civilisation.	Medium
Responsible, ethical and engaged citizens	Not applicable.	Low

Learning Task and Assessment:

Learning Outcomes Assessed	Learning Tasks	Assessment Type	Weighting
K1-5, S1-4, A1	Participate in class activities.	Portfolio of completed work	10 - 30%
K1-5, S1-4, A1-3	Self directed or group exploration.	Projects	10 - 30%
K1-5, S1-4, A1, A2	Review and skills practice.	Tests / Examinations	40 - 60%

Adopted Reference Style:

APA