

Unit Outline (Higher Education)

Institute / School: Institute of Education, Arts & Community

Unit Title: Mathematics Content and Pedagogy 1

Unit ID: HENAE6025

Credit Points: 15.00

Prerequisite(s): Nil

Co-requisite(s): Nil

Exclusion(s): Nil

ASCED: 070301

Description of the Unit:

This unit develops an understanding of Mathematics as a "critical subject in secondary schooling" for students' future educational and employment opportunities. A focus on modern techniques of teaching Mathematics will be explored through content relevant to mathematics at a secondary level. Teaching and learning Mathematics in years 5-10 will be examined using current curriculum and policy documents as the basis. Teachers will be required to critically examine current and past practices in learning and teaching Mathematics with reference to curriculum documents as well as articles and papers written within the Mathematics education community. Technology commonly used in the Mathematics classroom will be explored with emphasis on using technology to enhance learning.

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

Work Experience:

Not wholly work experience: Student is not undertaking work experience in industry or student is undertaking work experience in industry where learning and performance is directed by the provider.

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	■	■	■	■	■	■
Intermediate	■	■	■	✓	■	■
Advanced	■	■	■	■	■	■

Learning Outcomes:

(On successful completion of the course the students are expected to be able to):

Knowledge:

- K1.** Apply effective teaching strategies for Mathematics at a secondary level.
- K2.** Examine contemporary curriculum policies and guidelines relevant to teaching Mathematics in years 5-10.
- K3.** Apply and integrate technology in Mathematical investigations and presentations.
- K4.** Demonstrate mathematics content knowledge relevant to appropriate levels of current curriculum documents.
- K5.** Develop thinking and reasoning skills appropriate to the teaching of mathematics.

Skills:

- S1.** Use the current curriculum documents as a guide to develop curriculum.
- S2.** Critically reflect on the thinking processes associated with the teaching and learning of Mathematics.
- S3.** Incorporate appropriate technology in the learning of Mathematics.
- S4.** Analyse student work samples and give appropriate feedback to enhance student learning and as a basis for informing future planning.
- S5.** Build mathematics content knowledge relevant for students in Years 5-10.

Application of knowledge and skills:

- A1.** Research assessment and how formative assessment can be used in the mathematics classroom.
- A2.** Assess student work samples and document the next level of learning that is applicable for the students.
- A3.** Design of lesson sequence that incorporates inquiry learning, problem solving and the use of technology.
- A4.** Demonstrate personal competence in mathematics.

Unit Content:

Topics may include:

- Engagement techniques in Mathematics.
- Linking Mathematics Curriculum content to mathematical activities.
- Understanding the appropriate mathematics content.
- Making links to previous mathematical knowledge.
- Designing learning activities in Mathematics.
- Designing learning sequences in Mathematics.
- Examining real world contexts for mathematics.

- Organising Mathematics content into effective learning sequences.
- Development of ICT activities that support the learning of mathematics.
- Content development for students in Years 5-10.
- Teaching strategies for teaching mathematics.
- The use of formative and summative assessment in Mathematics.
- Topic planning

FEDTASKS

Federation University Federation recognises that students require key transferable employability skills to prepare them for their future workplace and society. FEDTASKS (**T**ransferable **A**tttributes **S**kills and **K**nowledge) provide a targeted focus on five key transferable Attributes, Skills, and Knowledge that are embedded within curriculum, developed gradually towards successful measures and interlinked with cross-discipline and Co-operative Learning opportunities. *One or more FEDTASK, transferable Attributes, Skills or Knowledge must be evident in the specified learning outcomes and assessment for each FedUni Unit, and all must be directly assessed in each Course.*

FEDTASK attribute and descriptor		Development and acquisition of FEDTASKS in the Unit	
		Learning Outcomes (KSA)	Assessment task (AT#)
FEDTASK 1 Interpersonal	<p>Students will demonstrate high-level skills to effectively communicate, interact and work with others both individually and in groups.</p> <p>Students will be required to display (in person and/or online) high-level skills in-person and/or online in:</p> <ul style="list-style-type: none"> • Effective verbal and non-verbal communication via a range of synchronous and asynchronous methods • Active listening for meaning and influencing • High-level empathy for others • Negotiating and demonstrating extended conflict resolution skills • Working respectfully in cross-cultural and diverse teams 	K5	AT1
FEDTASK 2 Leadership	<p>Students will demonstrate the ability to apply leadership skills and behaviours</p> <p>Students will be required to display skills in:</p> <ul style="list-style-type: none"> • Creating, contributing to, and enabling collegial environments • Showing self-awareness and the ability to self-reflect for personal growth • Inspiring and enabling others • Making informed and evidence-based decisions through consultation with others • Displaying initiative and ability to solve problems 	K2, A3	AT1, AT2

FEDTASK attribute and descriptor		Development and acquisition of FEDTASKS in the Unit	
		Learning Outcomes (KSA)	Assessment task (AT#)
FEDTASK 3 Critical Thinking and Creativity	<p>Students will demonstrate an ability to work in complex and ambiguous environments, using their imagination to create new ideas.</p> <p>Students will be required to display skills in:</p> <ul style="list-style-type: none"> • Reflecting critically on complex problems • Synthesising, evaluating ideas, concepts and information • Proposing alternative perspectives to refine ideas • Challenging conventional thinking to clarify concepts through deep inquiry • Proposing creative solutions in problem solving 	K2	AT1
FEDTASK 4 Digital Literacy	<p>Students will demonstrate the ability to work proficiently across a range of tools, platforms and applications to achieve a range of tasks</p> <p>Students will be required to display high-level skills in:</p> <ul style="list-style-type: none"> • Finding, accessing, collating, evaluating, managing, curating, organising and appropriately and securely sharing complex digital information at a high-level • Receiving and responding to messages in a range of digital media • Using digital tools appropriately to conduct research • Contributing proficiently to digital teams and working groups • Participating in and utilising digital learning opportunities 	K4	AT2
FEDTASK 5 Sustainable and Ethical Mindset	<p>Students will demonstrate the ability to think ethically and sustainably.</p> <p>Students will be required to display (in person and/or online) high-level skills in-person and/or online in:</p> <ul style="list-style-type: none"> • The responsible conduct of research • Making informed judgments that consider the impact of devising solutions in multiple global economic environmental and societal contexts • Demonstrating commitment to social responsibility as a professional and a citizen • Generating research solutions which are sustainable, ethical, socially responsible and/or sustainable • Extending lifelong, life-wide and life-deep learning to be open to diverse others • Demonstrate extended actions to foster sustainability in their professional and personal life. 	K3	AT2

Learning Task and Assessment:

Learning Outcomes Assessed	Assessment Tasks	Assessment Type	Weighting
K1, K4, K5, S1, S2, S4, S5, A1, A2, A4	Case study on mathematics teaching and learning: use of assessment to understand student mathematical thinking	Essay & Critical Response	40-60%
K2, K3, K4, K5, S1, S3, A3	Development of a lesson plan to cater for student learning	Curriculum Development	40-60%

Adopted Reference Style:

APA

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

Fed Cite - [referencing tool](#)