Unit Outline (Higher Education)

Institute / School:	Institute of Education, Arts & Community
Unit Title:	MATHEMATICS CONTENT AND PEDAGOGY 2
Unit ID:	EDMST6126
Credit Points:	15.00
Prerequisite(s):	Nil
Co-requisite(s):	Nil
Exclusion(s):	Nil
ASCED:	070301

Description of the Unit:

This is the second in a series of two units to help out-of-field and non-specialist mathematics teachers develop knowledge and skills to teach mathematics in years 5-10. In this unit, students will expand their understanding of mathematical thinking and use it to refine mathematics teaching practices. Students will continue to build their mathematical knowledge for teaching and reflect on their beliefs of mathematics and mathematics teaching and learning in practice. Drawing on research-informed practices, students will design a unit of work to develop a holistic learning experience for school students. The content will focus on measurement and geometry, probability and statistics, and mathematical proficiencies (working mathematically).

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. Demonstrate confidence with the content of secondary school Mathematics.

K2. Discuss how a range of teaching strategies can be implemented in the secondary mathematics classroom.

K3. Explain strategies for mathematical problem solving.

K4. Examine contemporary curriculum policies and guidelines relevant to teaching Mathematics.

K5. Examine a broad knowledge of theories about how different people construe and learn Mathematics.

K6. Apply effective teaching strategies for learning Mathematics at the secondary level.

Skills:

S1. Research historical and contemporary issues in Mathematics education.

S2. Identify and examine specific issues relating to current practice in the teaching of Mathematics.

S3. Design classroom activities including ones that use thinking routines and computational thinking.

S4. Develop skills in their own personal mathematical competence.

Application of knowledge and skills:

A1. Examine, evaluate and adapt a problem solving activity based at a junior secondary level.

A2. Research accelerated and remedial learning in mathematics.

A3. Present a lesson in accelerated or remedial learning linking it to research.

A4. Demonstrate personal competence in mathematics.

Unit Content:

Topics may include:

- Mathematics and evidence-informed teaching.
- The important elements of problem solving.
- The exploration of acceleration and remediation in mathematics classrooms.
- Coding and how to introduce it to the secondary mathematics classroom.
- The use of thinking routines in the mathematics classroom.
- Teaching strategies for particular mathematics topics.
- Important elements of mathematics lessons.
- Discourse in the mathematics classroom.
- Reasoning and problem in the mathematics classroom.

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**ttributes **S**kills and **K**nowledge) provide a targeted focus on five key transferable Attributes, Skills, and Knowledge that are be 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	Students will demonstrate high-level skills to effectively communicate, interact and work with others both individually and in groups. Students will be required to display (in person and/or online) high-level skills in-person and/or online in: • 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	K3, A1	AT1
FEDTASK 2 Leadership	Students will demonstrate the ability to apply leadership skills and behaviours Students will be required to display skills in: • 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	K6, A3	AT2
FEDTASK 3 Critical Thinking and Creativity	Students will demonstrate an ability to work in complex and ambiguous environments, using their imagination to create new ideas. Students will be required to display skills in: • 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	K6	AT2
FEDTASK 4 Digital Literacy	Students will demonstrate the ability to work proficiently across a range of tools, platforms and applications to achieve a range of tasks Students will be required to display high-level skills in: • 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, A2	AT2

FEDTASK attribute and descriptor		Development and acquisition of FEDTASKS in the Unit	
		Learning Outcomes (KSA)	Assessment task (AT#)
FEDTASK 5 Sustainable and Ethical Mindset	Students will demonstrate the ability to think ethically and sustainably. Students will be required to display (in person and/or online) high-level skills in-person and/or online in: • 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, K2, K3, S2, S3, S4, A1	Reviewing research literature and resources to inform teaching a specific mathematical content area	Develop classroom activities	40 – 60%
K1, K2, K4, K5, K6, S1, S4, A2, A3	Developing a unit of work for school students	Curriculum development and teaching	40 – 60%

Adopted Reference Style:

APA

Refer to the library website for more information

Fed Cite - referencing tool