Unit Outline (Higher Education)

Institute / School:	Institute of Education, Arts & Community
Unit Title:	Mathematics Curriculum 1
Unit ID:	EDBED3028
Credit Points:	15.00
Prerequisite(s):	Nil
Co-requisite(s):	Nil
Exclusion(s):	(EDDDE3001)
ASCED:	070301

Description of the Unit:

This unit is the first in a sequence of two that focuses on curriculum and pedagogy in the Mathematics specialist teaching area for undergraduate Pre-Service Teachers. This unit prepares Pre-service Teachers to teach in secondary schools with the major emphasis being on Years 7 to 10. It includes the nature and aims of mathematics education and will focus on contemporary teaching strategies used in schools. A constructivist perspective on learning will be encouraged and issues of gender, culture, and literacy in mathematics considered.

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:

Knowledge:

K1. Examine effective teaching strategies using a range of resources, including ICT, that engage students in their learning of Mathematics at a secondary level.

K2. Demonstrate knowledge and understanding of the concepts, substance and structure of the content and teaching strategies relevant to teaching Mathematics in years 7-10.

K3. Explore the application and integration of technology in Mathematical investigations and presentations.

K4. Know and understand literacy and numeracy teaching strategies and their application in mathematics curriculum.

Skills:

S1. Use the current policy documents as a guide to develop curriculum.

S2. Reflect on the thinking processes associated with the teaching and learning of Mathematics.

S3. Incorporate appropriate technology resources in the learning of Mathematics.

S4. Assess student work and give appropriate feedback to enhance student learning and as a basis for informing future planning.

Application of knowledge and skills:

A1. Write an analysis of a Mathematics textbook incorporating theoretical understandings about the teaching and learning of Mathematics.

A2. Design a lesson sequence that incorporates the selection and use of technology, including ICT, to expand curriculum learning opportunities for students and enhance student engagement.

A3. Examine assessment techniques in mathematics with reference to contemporary research.

Unit Content:

Topics to be covered

- Engagement techniques in mathematics.
- Examine issues related to the mathematical literacy and the barriers these can create to learning.
- Applying the concepts, substance and structure of mathematics.
- Linking mathematics curriculum content to mathematical activities.
- Making links to previous mathematical knowledge.
- Designing learning activities and applying relevant teaching strategies in mathematics.
- Designing learning sequences in mathematics.
- Examining real world contexts for mathematics.
- Organising mathematics content into effective learning sequences.
- Selection of relevant resources, including ICT.
- Development of ICT activities that support the learning of mathematics.
- Effective assessment that guides learning.
- The use of formative and summative assessment in mathematics.
- Topic planning and the importance of diagnostic assessment.

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 the ability to effectively communicate, interact and work with others both individually and in groups. Students will be required to display skills in-person and/or online in: • Using effective verbal and non-verbal communication • Listening for meaning and influencing via active listening • Showing empathy for others • Negotiating and demonstrating conflict resolution skills • Working respectfully in cross-cultural and diverse teams.	K2, S2	AT1
FEDTASK 2 Leadership	Students will demonstrate the ability to apply professional skills and behaviours in leading others. Students will be required to display skills in: • Creating a collegial environment • Showing self-awareness and the ability to self-reflect • Inspiring and convincing others • Making informed decisions • Displaying initiative	K1, A2	AT2
FEDTASK 3 Critical Thinking and Creativity	Students will demonstrate an ability to work in complexity and ambiguity using the imagination to create new ideas. Students will be required to display skills in: • Reflecting critically • Evaluating ideas, concepts and information • Considering alternative perspectives to refine ideas • Challenging conventional thinking to clarify concepts • Forming creative solutions in problem solving	S3, K4	AT2
FEDTASK 4 Digital Literacy	Students will demonstrate the ability to work fluently across a range of tools, platforms and applications to achieve a range of tasks. Students will be required to display skills in: • Finding, evaluating, managing, curating, organising and sharing digital information • Collating, managing, accessing and using digital data securely • Receiving and responding to messages in a range of digital media • Contributing actively to digital teams and working groups • Participating in and benefiting from digital learning opportunities	K3	AT1

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 consider and assess the consequences and impact of ideas and actions in enacting ethical and sustainable decisions. Students will be required to display skills in: • Making informed judgments that consider the impact of devising solutions in global economic environmental and societal contexts • Committing to social responsibility as a professional and a citizen • Evaluating ethical, socially responsible and/or sustainable challenges and generating and articulating responses • Embracing lifelong, life-wide and life-deep learning to be open to diverse others • Implementing required actions to foster sustainability in their professional and personal life	A4	AT1

Learning Task and Assessment:

Learning Outcomes Assessed	Assessment Tasks	Assessment Type	Weighting
K2, S2, A1, APST 2.1	Reviewing current research and theories about effective mathematics textbooks and textbook uses Critical analysis of a textbook used in secondary Mathematics classrooms Adapting or supplementing materials when using the textbook	Literature review and case study	40 - 60%
K1, K3, K4, S1, S3, S4, A2, A3, APST 2.2, 2.3, 2.5, 2.6, 3.2, 3.4, 5.1	Researching approaches to teaching a topic in mathematics effectively Developing a research-informed lesson to develop mathematical understanding	Professional Plan	40 - 60%

Adopted Reference Style:

APA

Refer to the library website for more information

Fed Cite - referencing tool