



UNIVERSITI TEKNOLOGI MARA

MAE572: PROBLEM SOLVING IN MATHEMATICS

Course Name (English)	PROBLEM SOLVING IN MATHEMATICS APPROVED
Course Code	MAE572
MQF Credit	3
Course Description	This course is designed to introduce prospective elementary and secondary teachers to both theory and practice related to mathematical problem solving in schools. Students will explore pedagogical issues and participate in a variety of exercises, problems, and investigations as they explore secondary and primary-school mathematics concepts from a problem solving perspective in an interactive manner. The problems are of a variety of types and may include problems involving puzzles or patterns, word problems, algebra problems, counting and probability problems, problems dealing with geometry, and other mathematical problems. The emphasis is on exploration of various mathematics contexts to learn mathematics, to pose problems and problem extensions, to solve problems, and to communicate mathematical demonstrations.
Transferable Skills	Reflective Learner Independent, Critical Thinker Expert in Field, Problem Solving
Teaching Methodologies	Lectures, Tutorial, Problem Based Learning (PBL), Discussion
CLO	CLO1 Apply heuristics techniques to the process of solving routine and non-routine problems. CLO2 Generalize problem-solving skill. CLO3 Explain and apply problem-solving process and connect with real life problems
Pre-Requisite Courses	No course recommendations
Topics	
1. Teachers as Learners 1.1) n/a	
2. Concepts of a mathematical problem 2.1) n/a	
3. Stages of Problem solving 3.1) n/a	
4. Problem posing 4.1) n/a	
5. heuristics process 5.1) n/a	
6. cognition and metacognition 6.1) n/a	

Assessment Breakdown		%		
Continuous Assessment		100.00%		
Details of Continuous Assessment	Assessment Type	Assessment Description	% of Total Mark	CLO
	Assignment	Reflective Journal	10%	CLO2
	Final Test	Test	40%	CLO1
	Group Project	Problem solving activities	30%	CLO2
	Presentation	Presentation	20%	CLO3
Reading List	Reference Book Resources	<ul style="list-style-type: none"> • Timothy P Chartier 2020, <i>X Games in Mathematics: Sports Training That Counts! (Problem Solving in Mathematics and Beyond)</i>, World Scientific Publishing Company [ISBN: 978-981122487] • Boris Pritsker 2021, <i>Mathematical Labyrinths. Pathfinding (Problem Solving in Mathematics and Beyond)</i>, World Scientific Publishing [ISBN: 978-981123007] • James D Stein 2020, <i>Fate Of Schrodinger's Cat, The: Using Math And Computers To Explore The Counterintuitive (Problem Solving In Mathematics And Beyond Book 17)</i>, World Scientific • Patricio Felmer, Peter Liljedahl, Boris Koichu 2019, <i>Problem Solving in Mathematics Instruction and Teacher Professional Development (Research in Mathematics Education)</i>, 1 Ed., Springer [ISBN: 978-007134307] 		
Article/Paper List	This Course does not have any article/paper resources			
Other References	This Course does not have any other resources			