



## UNIVERSITI TEKNOLOGI MARA

### UED101: MATHEMATICAL THINKING FOR NOVICES

<b>Course Name (English)</b>	MATHEMATICAL THINKING FOR NOVICES <b>APPROVED</b>
<b>Course Code</b>	UED101
<b>MQF Credit</b>	
<b>Course Description</b>	One of the major aims of mathematical learning is the development of mathematical thinking. This course embarks on this endeavour by using problem solving as the central tool towards this development. It involves the acquisition and application of mathematics concepts and skills in a wide range of situations, including non-routine and real world problems to provide an opportunity for students to become problem solvers. Students will participate in a variety of exercises, problems, and investigations as they explore mathematics concepts from a problem solving perspective in an interactive manner. The emphasis will be on exploration of various mathematics contexts to learn mathematics, to solve problems, and to communicate mathematical ideas through multiple representations.
<b>Transferable Skills</b>	Independent and critical thinker & expert in the field
<b>Teaching Methodologies</b>	Lectures, Tutorial, Simulation Activity, Discussion, Presentation
<b>CLO</b>	CLO1 Apply mathematical thinking strategies or heuristics to the process of solving the non-routine math problem CLO2 Apply logical thinking (e.g. via non routine tasks and Sudoku) in solving math problems CLO3 Use multiple representations to communicate mathematical ideas
<b>Pre-Requisite Courses</b>	No course recommendations
<b>Topics</b>	
<b>1. Introduction to Mathematical Thinking</b> 1.1) a. Intro to the field of Mathematics Thinking 1.2) b. Routine vs Non Routine	
<b>2. Problem Solving in Mathematics</b> 2.1) • Experiential learning in problem solving 2.2) • Fundamentals of numbers, operation, measurement and estimation 2.3) • Problem solving on algebraic equations.	
<b>3. Heuristic Processes</b> 3.1) Four Basic Phases 3.2) Problem solving strategies 3.3) Problem solving on ratios, proportion and percentage.	
<b>4. Problem Solving Activity</b> 4.1) Logical Thinking Activity	

Assessment Breakdown	%
Continuous Assessment	100.00%

Details of Continuous Assessment	Assessment Type	Assessment Description	% of Total Mark	CLO
	Group Project	Small group activities and discussion	50%	CLO2
	Presentation	n/a	10%	CLO3
	Test	n/a	40%	CLO1

Reading List	Recommended Text	<ul style="list-style-type: none"> <li>• Parmjit Singh 2013, <i>Math Gym: Your Problem Solving Challenge.</i>, Primera Publishing Kuala Lumpur</li> </ul>
	Reference Book Resources	<ul style="list-style-type: none"> <li>• Keith Devlin 2012, <i>Introduction to Mathematical Thinking</i>, Keith Publisher USA</li> <li>• Parmjit Singh 2008, <i>Mathematical Problem Solving for Teenagers.</i>, PRIMERA Publishing Kuala Lumpur</li> <li>• Schoenfeld A., <i>Mathematical Thinking and Problem Solving</i>, Hillsdale</li> <li>• Gyorgy Polya 1945, <i>How to Solve it</i>, Priceton University Press</li> </ul>
Article/Paper List	This Course does not have any article/paper resources	
Other References	This Course does not have any other resources	