

Subject Description Form

Subject Code	AMA103
Subject Title	Foundation Mathematics I for Science and Engineering
Credit Value	3
Level	1
Pre-requisite / Co-requisite/ Exclusion	Nil
Objectives	This is a bridging subject to provide students with knowledge required for the understanding and application of mathematical concepts and techniques. Students can develop their own ability of logical thinking and extend their knowledge to solve problems different from the examples.
Intended Learning Outcomes	Upon completion of the subject, students will be able to: <ol style="list-style-type: none">1. State the definitions, theorems, concepts and techniques;2. Solve problems resembling to examples;3. Solve harder problems which need matured skills, which are indirectly related to the delivered knowledge, or which need knowledge from different topics.
Subject Synopsis/ Indicative Syllabus	<i>Basic concepts</i> Mathematical induction; Functions and inverse functions; Elementary functions, trigonometric functions; Complex numbers; De Moivre's Theorem; Roots of a complex number. <i>Differential Calculus:</i> Limits and continuity; Derivatives; Techniques of differentiation; Mean value Theorem; Higher derivatives; Maxima and minima; Curve sketching. <i>Integral Calculus:</i> Definite and indefinite integrals; Fundamental Theorem of Calculus; Techniques of integration; Taylor's Theorem; Applications in geometry, physics and engineering.
Teaching/Learning Methodology	The subject will be delivered mainly through lectures and tutorials. The lectures are organized to deliver and to explain the concepts, theories and techniques. Tutorials help to solve the difficult exercises which the students cannot solve by themselves. Students are encouraged to revise and do exercises at home to enhance learning.

Assessment Methods in Alignment with Intended Learning Outcomes	Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)		
			1	2	3
	a. Assignments and tests	40%	✓	✓	✓
	b. Examination	60%	✓	✓	✓
	Total	100%			
<p>Continuous Assessment comprises of assignments and tests. A written examination is held at the end of the semester.</p> <p>To pass this subject, students are required to obtain Grade D or above in both the Continuous Assessment and the Examination components.</p>					
Student Study Effort Expected	Class contact:				
	▪ Lecture		28 Hrs.		
	▪ Tutorial and Student Presentation		14 Hrs.		
	Other student study effort:				
	▪ Reading teaching material and solved problem		28 Hrs.		
	▪ Doing exercises and assignments		42 Hrs.		
	Total student study effort		112 Hrs.		
Reading List and References	<u>Textbook:</u>				
	Hung, K.F. & Pong, G.T.Y.	Foundation Mathematics Revised edition	McGraw Hill 2008		
	<u>References:</u>				
	Varberg, D., Purcell, E.J. & Rigdon, S.E.	Calculus 9 th edition	Prentice Hall 2006		
Giordano, F.R., Weir, M.D. & Finney R.L.	Calculus for Engineers and Scientists	Addison-Wesley 1988			