Subject Description Form

Subject Code	AMA1061
Subject Title	Foundation Mathematics
Credit Value	0
Level	1
Pre-requisite / Co-requisite/ Exclusion	Nil
Objectives	This is a subject to provide students with a solid foundation in Mathematics. The emphasis will be on the application of mathematical methods to solving basic mathematical problems.
Intended Learning Outcomes	Upon completion of the subject, students will be able to: 1. solve problems using the concept of functions and inverse functions; 2. apply the basic operations of matrices and calculate the determinant; 3. apply mathematical reasoning to analyse essential features of different mathematical problems such as differentiation and integration; 4. apply appropriate mathematical techniques to model and solve problems in science and engineering; 5. extend their knowledge of mathematical techniques and adapt known solutions in different situations.
Subject Synopsis/ Indicative Syllabus	*Basic algebra and trigonometry:* Mathematical Induction, binomial expansion, functions and inverse functions, elementary functions, trigonometric function (including compound angle formulas). *Limit and differentiation:* Limit concept, continuous function, derivative and differential, techniques of differentiation, mean value theorem, logarithmic and exponential functions, higher order derivatives, maxima and minima. *Matrices and systems of linear equations:* Matrix and matrix algebra, elementary row operations, systems of linear equations and Gaussian elimination, systems of homogeneous equations. *Integration:* Indefinite and definite integrals, elementary concepts, fundamental theorem of calculus.
Teaching/Learning Methodology	The subject will be delivered mainly through lectures, tutorials and presentation. The lectures aim to provide students with an integrated knowledge required for the understanding and application of mathematical concepts and techniques. Tutorials and presentations will be held to develop students' ability of logical thinking and effective communication.

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	4	5
a. Assignment and Mid-term Test	40%	✓	✓	✓	✓	✓
b. Examination	60%	✓	✓	✓	✓	✓
Total	100 %					

Continuous Assessment comprises of assignments and a mid-term test. A written examination is held at the end of the semester.

Questions used in assignments, tests and examinations are set to test students' ability with regard to any one of the intended learning outcomes.

To pass this subject, students are required to obtain Grade D or above in **both** the Continuous Assessment and the Examination components.

Student Study Effort Required

Class contact:	
▪ Lecture	28 Hrs.
▪ Tutorial and Student Presentation	14 Hrs.
Other student study effort:	
▪ Assignment	20 Hrs.
▪ Self-study	58 Hrs.
Total student study effort	120 Hrs.

Reading List and References

Textbook:

Chung, K.C.	A Short Course in Calculus and Matrices	McGraw-Hill 2008

References:

K.F. Hung, Wilson C.K. Kwan and Glory T.Y. Pong	Foundation Mathematics & Statistics	McGraw Hill 2011