Subject Description Form

Subject Code	AMA106
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 concepts* Functions and inverse functions; Elementary functions, Trigonometric functions. *Differential Calculus*: Limits and continuity (intuitive approach); Derivatives; Techniques of differentiation; Mean Value Theorem; Higher derivatives; Maxima and minima; Curve sketching. *Integral Calculus*: Indefinite integrals; Techniques of integration; Definite integrals. Fundamental Theorem of Calculus; Taylor's Theorem; Applications in geometry, physics and engineering. *Matrix Algebra*: Introduction to matrices and determinants.
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	26 Hrs.
▪ Tutorial and Student Presentation	13 Hrs.
Other student study effort:	
▪ Assignment	20 Hrs.
▪ Self-study	50 Hrs.
Total student study effort	109 Hrs.

Reading List and References

Textbook:

Chung, K.C.	A Short Course in Calculus and Matrices	McGraw-Hill 2013

References:

K.F. Hung, Wilson C.K. Kwan and Glory T.Y. Pong	Foundation Mathematics & Statistics	McGraw Hill 2013