Subject Description Form

<table>
<tr><td>Subject Code</td><td>AMA1708</td></tr>
<tr><td>Subject Title</td><td>Calculus and Linear Algebra</td></tr>
<tr><td>Credit Value</td><td>0</td></tr>
<tr><td>Level</td><td>1</td></tr>
<tr><td>Pre-requisite</td><td>Nil</td></tr>
<tr><td>Exclusion</td><td>Calculus and Linear Algebra (AMA1008)</td></tr>
<tr><td>Objectives</td><td>This subject is to provide students with the basic skills of Calculus, and to introduce the ideas and techniques of basic linear algebra and its applications.</td></tr>
<tr><td>Intended Learning Outcomes</td><td>Upon completion of the subject, students will be able to:
a) apply mathematical reasoning to solve problems in their discipline
b) make use of the knowledge of mathematical techniques and adapt known solutions to various situations
c) apply mathematical modeling in problem solving in applied sciences
d) develop and extrapolate mathematical concepts in solving new problems
e) undertake continuous learning</td></tr>
<tr><td>Subject Synopsis/ Indicative Syllabus</td><td>Review of basic algebra and trigonometry; Limit and continuity; Derivatives; Mean Value Theorem; Logarithmic and exponential functions; Maxima and Minima; Curve sketching; Definite and indefinite integrals; Methods of integration; Fundamental Theorem of Calculus; Taylor’s Theorem with remainder; Improper Integrals; Applications.

Matrices, Determinant and systems of linear equations.</td></tr>
<tr><td>Teaching/Learning Methodology</td><td>By lectures, tutorials and exercises.</td></tr>
<tr><td>Assessment Methods in Alignment with Intended Learning Outcomes</td><td>
<table>
<tr><td>Specific assessment methods/tasks</td><td>% weighting</td><td colspan="5">Intended subject learning outcomes to be assessed (Please tick as appropriate)</td></tr>
<tr><td></td><td></td><td>a</td><td>b</td><td>c</td><td>d</td><td>e</td></tr>
<tr><td>1. Tests/Assignments</td><td>40%</td><td>✓</td><td>✓</td><td>✓</td><td>✓</td><td>✓</td></tr>
<tr><td>2. Examination</td><td>60%</td><td>✓</td><td>✓</td><td>✓</td><td>✓</td><td>✓</td></tr>
<tr><td>Total</td><td>100 %</td><td colspan="5"></td></tr>
</table>
Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:
</td></tr>
</table>

	The subject focuses on knowledge, skills and understanding of **Calculus and Linear Algebra**, thus, **Exam-based assessment** is the most appropriate assessment method, including 60% examination. Continuous Assessment comprising individual assignments and tests (40%) are included so as to keep the students in progress. A written examination is held at the end of the semester. By learning how to solve a collection of theoretical and practical mathematical problems designed and distributed in individual assignments, tests and examination, the students will master the basic techniques in calculus and linear algebra, and will be able to apply the techniques to model and solve simple practical problems in their discipline.	
Student Study Effort Expected	Class contact:	
	• Lecture	26 Hrs.
	• Tutorial	13 Hrs.
	Other student study effort:	
	• Self-study	66 Hrs.
	Total student study effort:	105 Hrs.

Reading List and References	K.F. Hung, Wilson C.K. Kwan and Glory T.Y. Pong	Foundation Mathematics & Statistics	McGraw Hill 2013
	Chan, C.K., Chan, C.W. & Hung, K.F.	Basic Engineering Mathematics	McGraw Hill 2013
	Thomas, G.B., Finney, R.L., Weir, M.D. & Giordano, F.R.	Thomas' Calculus 12th edition	Addison Wesley 2009