

Subject Description Form

Subject Code	AMA10071
Subject Title	Calculus and Linear Algebra
Credit Value	3
Level	1
Pre-requisite	Nil
Exclusion	Calculus and Linear Algebra (AMA1007) Basic Mathematics I - Calculus and Probability & Statistics (AMA1110) Calculus for Engineers (AMA1130) Calculus (AMA1131) Foundation Mathematics for Accounting and Finance (AMA1500) Calculus (AMA1702)
Objectives	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.
Intended Learning Outcomes	Upon completion of the subject, students will be able to: <ol style="list-style-type: none">a. apply mathematical reasoning to solve problems in their disciplineb. make use of the knowledge of mathematical techniques and adapt known solutions to various situationsc. apply mathematical modeling in problem solving in applied sciencesd. develop and extrapolate mathematical concepts in solving new problemse. undertake continuous learning
Subject Synopsis/ Indicative Syllabus	Review of basic algebra and trigonometry; Logarithmic and exponential functions; Limit and continuity; Derivatives; Maxima and Minima; Curve sketching; Definite and indefinite integrals; Methods of integration; Fundamental Theorem of Calculus; Applications. Matrices, Determinant and systems of linear equations.
Teaching/Learning Methodology	By lectures, tutorials and exercises

Assessment Methods in Alignment with Intended Learning Outcomes	Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)				
			a	b	c	d	e
	1. Tests/assignments	40%	✓	✓	✓	✓	✓
	2. Examination	60%	✓	✓	✓	✓	✓
	Total	100 %					
	<p>Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:</p> <p>By learning how to solve a collection of theoretical and practical mathematical problems designed and distributed in 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.</p>						
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	<p>K.F. Hung, Wilson C.K. Kwan and Glory T.Y. Pong (2013) Foundation Mathematics & Statistics. McGraw Hill</p> <p>Chan, C.K., Chan, C.W. & Hung, K.F. (2015) Basic Engineering Mathematics. McGraw Hill</p> <p>Thomas, G.B., Weir, M.D. & Hass, J. Thomas' Calculus 14th ed. Pearson Education 2017</p>						