Subject Description Form

Subject Code	AMA1007
Subject Title	Calculus and Linear Algebra
Credit Value	3
Level	1
Pre-requisite/ Co-requisite/ Exclusion	Pre-requisite: HKDSE extended module in Calculus and Statistics (M1) or HKDSE extended module in Calculus and Algebra (M2) with Level 2 or above or Basic Mathematics - an introduction to Algebra and Differential Calculus (AMA1100)
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: 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
Subject Synopsis/ Indicative Syllabus	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.
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 %					

Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:

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.

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

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

	James Stewart. Calculus. 8th ed. Cengage Learning 2016 Thomas, G.B., Weir, M.D. & Hass, J. Thomas' Calculus 14th ed. Pearson Education, Inc. 2017 Howard Anton & Chris Rorres. Elementary Linear Algebra 11th ed. John Wiley and Sons 2013