

Subject Description Form

Subject Code	AMA1006
Subject Title	Basic Statistics
Credit Value	2
Level	1
Pre-requisite and/or Exclusion(s)	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 introduce to students the fundamental concepts of probability distributions, sampling, and estimation of parameters in statistics.
Intended Learning Outcomes	<p>Upon completion of the subject, students will be able to:</p> <ul style="list-style-type: none"> (a) apply statistical reasoning to describe and analyze essential features of data sets and different problems (b) extend their knowledge of statistical techniques and adapt inferential procedures to different situations (c) develop and extrapolate statistical concepts in synthesizing and solving problems (d) search for useful information and use statistical tables in solving statistical problems (e) undertake the formulation of statistical problems through continuous self-learning (f) demonstrate the abilities of logical and analytical thinking
Subject Synopsis/ Indicative Syllabus	<p><i>Introduction to Probability</i> Experiment, events and probability. Probability rules. Bayes' Theorem.</p> <p><i>Discrete Random Variables</i> Introduction to discrete random variables such as uniform, binomial, Poisson, etc. and their probability distributions. Mathematical expectation.</p> <p><i>Continuous random variables</i></p>

	<p>Concept of continuous random variables such as uniform, exponential, normal, etc. and their probability density functions. Mathematical expectation. Normal approximation to the binomial distribution.</p> <p><i>Sampling Distributions</i> Population and random samples. Sampling distributions related to sample mean, sample proportions, and sample variances.</p> <p><i>Estimation of Parameters</i> Concepts of a point estimator and a confidence interval. Point and interval estimates of a mean and the difference between two means.</p>																																						
<p>Teaching/Learning Methodology</p>	<p>The subject will be delivered mainly through lectures and tutorials. The lectures will be conducted to introduce the basic statistics concepts of the topics in the syllabus which are then reinforced by learning activities involving demonstration and tutorial exercise.</p>																																						
<p>Assessment Methods in Alignment with Intended Learning Outcomes</p>	<table border="1" data-bbox="475 1010 1449 1413"> <thead> <tr> <th rowspan="2">Specific assessment methods/tasks</th> <th rowspan="2">% weighting</th> <th colspan="6">Intended subject learning outcomes to be assessed (Please tick as appropriate)</th> </tr> <tr> <th>(a)</th> <th>(b)</th> <th>(c)</th> <th>(d)</th> <th>(e)</th> <th>(f)</th> </tr> </thead> <tbody> <tr> <td>1. Assignments/Test</td> <td>40%</td> <td>✓</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> <td>✓</td> </tr> <tr> <td>Total</td> <td>100%</td> <td colspan="6"></td> </tr> </tbody> </table> <p>Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes:</p> <p>The subject focuses on knowledge, skill and understanding of Basic Statistics, thus, Exam-based assessment is the most appropriate assessment method, including a test (no more than 40%) and an examination (60%). Moreover, assignments are included as a component of the continuous assessment so as to keep the students' learning in progress.</p>	Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)						(a)	(b)	(c)	(d)	(e)	(f)	1. Assignments/Test	40%	✓	✓	✓	✓	✓	✓	2. Examination	60%	✓	✓	✓	✓	✓	✓	Total	100%						
Specific assessment methods/tasks	% weighting			Intended subject learning outcomes to be assessed (Please tick as appropriate)																																			
		(a)	(b)	(c)	(d)	(e)	(f)																																
1. Assignments/Test	40%	✓	✓	✓	✓	✓	✓																																
2. Examination	60%	✓	✓	✓	✓	✓	✓																																
Total	100%																																						

Student Study Effort Expected	Class contact:	
	▪ Lecture	19 Hrs.
	▪ Tutorial	7 Hrs.
	Other student study effort:	
	▪ Self-study	44 Hrs.
	Total student study effort	70 Hrs.
Reading List and Reference	<p>Walpole, R.E., Myers, R.H., Myers, S.L. & Ye, K.Y. Probability and Statistics for Engineers and Scientists. 9th ed. Prentice Hall 2012</p> <p>Mendenhall, W., Beaver, R.J. & Beaver, B.M. Introduction to Probability and Statistics. 14th ed. Thomson 2013</p>	