

Subject Description Form

Subject Code	AMA1606
Subject Title	Basic Statistics
Credit Value	3
Level	1
Pre-requisite / Exclusion	Nil
Objectives	This subject is to introduce to students the fundamental concepts of probability distributions, sampling, and estimation and inference 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) perform basic statistical analyses and inferential procedures on different scientific problems (c) develop and extrapolate statistical concepts in synthesizing and solving problems (d) undertake the formulation of statistical problems through continuous self-learning (e) demonstrate the abilities of logical and analytical thinking
Subject Synopsis/ Indicative Syllabus	<p><i>Introduction to Probability</i></p> <p>Experiment, events and probability; Probability rules; Bayes' Theorem; Expectation</p> <p><i>Descriptive Statistics</i></p> <p>Tables, graphs, frequency distributions, and summary measures of location and dispersion</p> <p><i>Discrete Random Variables</i></p> <p>Probability mass function; Introduction to discrete distributions such as binomial, geometric, Poisson, etc.</p>

	<p><i>Continuous random variables</i></p> <p>Probability density function; Introduction to continuous random variables such as uniform, exponential, normal, chi-square etc.; Normal approximation to the binomial distribution</p> <p><i>Sampling Distributions</i></p> <p>Population and random samples; Sampling distributions related to sample mean and sample variance</p> <p><i>Statistical Inference</i></p> <p>Concepts of point estimation and confidence intervals; Point and interval estimation of mean, proportion, variance and difference of means or proportions; Tests of significance; Hypothesis tests of mean, proportion, variance and difference of means or proportions.</p>																																	
Teaching/Learning Methodology	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.																																	
Assessment Methods in Alignment with Intended Learning Outcomes	<table><tr><th rowspan="2">Specific assessment methods/tasks</th><th rowspan="2">% weighting</th><th colspan="5">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></tr><tr><td>1. Assignments/Test</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> <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</p>	Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)					(a)	(b)	(c)	(d)	(e)	1. Assignments/Test	40%	✓	✓	✓	✓	✓	2. Examination	60%	✓	✓	✓	✓	✓	Total	100%					
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2. Examination	60%	✓	✓	✓	✓	✓																												
Total	100%																																	

	included as a component of the continuous assessment so as to keep the students' learning in progress.	
Student Study Effort Expected	Class contact:	
	▪ Lecture	26 Hrs.
	▪ Tutorial	13 Hrs.
	Other student study effort:	
	▪ Assignments	20 Hrs.
	▪ Self-study	58 Hrs.
	Total student study effort	117 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. 15th ed. Thomson 2019</p>	