

Subject Description Form

Subject Code	AMA1602
Subject Title	Introduction to Statistics
Credit Value	3
Level	1
Co-requisite	Nil
Exclusion	Introduction to Statistics for Business (AMA1501) Introduction to Statistics (AMA1502)
Objectives	<p>This subject aims to:</p> <ul style="list-style-type: none"> (i) provide students with a variety of basic techniques in understanding and interpreting data; (ii) allow students to develop skills in analyzing scenarios and problems in engineering, industry and science by applying statistical methods. The emphasis will be on applications of elementary statistical methods to engineering, industry and science.
Intended Learning Outcomes	<p>Upon completion of the subject, students will be able to:</p> <ul style="list-style-type: none"> a. use a variety of basic techniques in understanding and interpreting data; b. apply elementary statistical methods in analyzing scientific and industrial problems; c. think critically and creatively about the uses and limitations of statistical methods in business; d. use statistical package and interpret the output, appreciate the applications of information technology for statistical analysis in engineering, industry and science.
Subject Synopsis/ Indicative Syllabus	<p>Descriptive Statistics Presentation of business data in tabular, diagrammatic and graphic forms; misleading presentations. Summary measures of location and spread.</p> <p>Probability Concepts of probability. Probability rules. Bayes' Theorem. Random variables and expected values; uses and limitations in decision making. Common probability distributions: Binomial, Poisson and Normal.</p> <p>Estimation</p>

	<p>Simple random samples. Sampling distributions: mean, proportion and differences. Confidence intervals: mean, proportion and differences.</p> <p>Hypothesis Testing Hypothesis testing: mean, proportion and differences.</p> <p>Chi-square Test Test of goodness of fit. Test of independence.</p> <p>Relationships between Variables Exploratory data analysis. Linear relationships: ordinary least squares. Correlation coefficients.</p> <p>Multiple Regression Multiple regression equation. Inferences about parameters. Modelling techniques</p>																																		
<p>Teaching/Learning Methodology</p>	<p>The lectures aim to provide the students with an integrated knowledge required for the understanding and application of statistical concepts and techniques. To develop students' ability for logical thinking and effective communication, tutorial and presentation sessions will be held.</p>																																		
<p>Assessment Methods in Alignment with Intended Learning Outcomes</p>	<table border="1"> <thead> <tr> <th rowspan="2">Specific assessment methods/tasks</th> <th rowspan="2">% weighting</th> <th colspan="4">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> </tr> </thead> <tbody> <tr> <td>1. Assignments and Presentation</td> <td>20%</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> </tr> <tr> <td>2. Mid-term Test</td> <td>30%</td> <td>✓</td> <td>✓</td> <td>✓</td> <td></td> </tr> <tr> <td>3. Examination</td> <td>50%</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> </tr> <tr> <td>Total</td> <td>100 %</td> <td colspan="4"></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 Statistics, thus, Exam-based assessment is the most appropriate assessment method, including 30% test and 50% examination. Moreover, 20% worth of assignments and presentations are included as a component of continuous assessment so as to keep the students in progress.</p>	Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)				a	b	c	d	1. Assignments and Presentation	20%	✓	✓	✓	✓	2. Mid-term Test	30%	✓	✓	✓		3. Examination	50%	✓	✓	✓	✓	Total	100 %				
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3. Examination	50%	✓	✓	✓	✓																														
Total	100 %																																		

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 References	<p><u>Study Guide:</u> Introduction to Statistics for Business, Department of Applied Mathematics, The Hong Kong Polytechnic University</p> <p><u>Reference Books:</u> Hung, K.F., Kwan, C.K., Pong, T.Y., <i>Foundation Mathematics & Statistics</i>, 2nd edition, 2013</p> <p>Aczel, A.D., <i>Complete Business Statistics</i>, 7th ed., McGraw-Hill, 2009.</p> <p>Levin, Richard I. and Rubin, David S., <i>Statistics for Management</i>, 7th ed., Prentice-Hall, 1998.</p> <p>David S. Moore, George P. McCabe, Bruce A. Craig, <i>Introduction to the practice of Statistics</i>, 9th ed., W. H. Freeman and Company, 2017.</p> <p>McClave, J. T., Benson, P. George and Sincich, Terry., <i>A First Course in Business Statistics</i>, 8th ed., Prentice Hall, 2001.</p>	