

Subject Description Form

Subject Code	AMA466																																				
Subject Title	Multivariate Statistical Methods																																				
Credit Value	3																																				
Level	4																																				
Pre-requisite	Applied Statistical Methods (AMA2631/AMA2631A) or equivalent																																				
Objectives	This subject is to enable students to understand and know how to apply multivariate statistical methods to social and physical sciences. The use of computer packages such as MINITAB, SPSS and SAS will be required in completing the assignments and mini-projects.																																				
Intended Learning Outcomes	<p>Upon satisfactory completion of the subject, students should be able to:</p> <ol style="list-style-type: none"> a. master the basic functions for multivariate analysis available in popular software packages; b. synthesize the statistical knowledge and techniques required in multivariate analysis; c. produce presentable analysis related to multivariate statistical methods; d. interpret analysis results and make recommendations for actions based on analysis results; e. work in a team as well as independently; f. present analysis results of applied problems in multivariate analysis. 																																				
Subject Synopsis/ Indicative Syllabus	<p>Multivariate distributions, marginal and conditional distributions, regression function, multiple and partial correlation coefficients. (11 hours)</p> <p>Sampling from multivariate normal distribution, Wishart distribution, Hotelling T-square distribution, inferences on mean vector and covariance. (5 hours)</p> <p>Discrimination and classification, clustering. (6 hours)</p> <p>Principal components, factor and canonical correlation analyses. (17 hours)</p>																																				
Teaching/Learning Methodology	The subject will be delivered mainly through lectures and tutorials. The lectures will be conducted to introduce the concepts of multivariate statistical methods of the topics in the syllabus, which are then reinforced by learning activities involving demonstration, tutorial exercise, assignments and mini-project.																																				
Assessment Methods in Alignment with Intended Learning Outcomes	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2" style="width: 25%;">Specific assessment methods</th> <th rowspan="2" style="width: 15%;">% weighting</th> <th colspan="6" style="width: 50%;">Intended subject learning outcomes to be assessed (Please tick as appropriate)</th> </tr> <tr> <th style="width: 8%;">a</th> <th style="width: 8%;">b</th> <th style="width: 8%;">c</th> <th style="width: 8%;">d</th> <th style="width: 8%;">e</th> <th style="width: 8%;">f</th> </tr> </thead> <tbody> <tr> <td>1. Assignments</td> <td style="text-align: center;">10%</td> <td style="text-align: center;">✓</td> <td></td> <td></td> <td style="text-align: center;">✓</td> <td style="text-align: center;">✓</td> <td style="text-align: center;">✓</td> </tr> <tr> <td>2. Tests</td> <td style="text-align: center;">10%</td> <td></td> <td style="text-align: center;">✓</td> <td style="text-align: center;">✓</td> <td></td> <td></td> <td style="text-align: center;">✓</td> </tr> </tbody> </table>							Specific assessment methods	% weighting	Intended subject learning outcomes to be assessed (Please tick as appropriate)						a	b	c	d	e	f	1. Assignments	10%	✓			✓	✓	✓	2. Tests	10%		✓	✓			✓
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	<table border="1"> <tr> <td>3. Mini-project</td> <td>20%</td> <td>✓</td> <td></td> <td></td> <td>✓</td> <td>✓</td> <td>✓</td> </tr> <tr> <td>4. 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> </table> <p>Explanation of the appropriateness of the assessment methods in assessing the intended learning outcomes: The subject focuses on knowledge, skill and understanding of Multivariate Statistical Methods, thus, Exam-based assessment is the most appropriate assessment method, including 10% test and 60% examination. Moreover, 10% worth of assignments and 20% mini-project are included as a component of continuous assessment so as to keep the students in progress. Continuous Assessment comprises of assignments, mini-project and tests. A written examination is held at the end of the semester.</p>	3. Mini-project	20%	✓			✓	✓	✓	4. Examination	60%		✓	✓			✓	Total	100 %						
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4. Examination	60%		✓	✓			✓																		
Total	100 %																								
Student Study Effort Expected	Class contact:																								
	▪ Lecture	26 Hrs.																							
	▪ Tutorial	13 Hrs.																							
	Other student study effort:																								
	▪ Assignment	20 Hrs.																							
	▪ Mini-project	20 Hrs.																							
	▪ Self-study	30 Hrs.																							
	Total student study effort	109 Hrs.																							
Reading List and References	<u>Textbook:</u>																								
	Johnson, R.A. & Wichern, D.W.	Applied Multivariate Statistical Analysis 6 th edition						Prentice Hall 2007																	
	<u>References:</u>																								
	Timm, N. H.	Applied Multivariate Analysis 1 st edition						Springer 2002																	
	Giri, N. C.	Multivariate Statistical Analysis 2 nd edition						CRC 2003																	
	Morrison, D.F.	Multivariate Statistical Methods 4 th edition						Duxbury Press 2004																	
	Anderson, T.W.	An introduction to Multivariate Statistical Analysis 3 rd edition						Wiley-Interscience 2003																	
Flury, B. & Riedwyl H.	Multivariate Statistics: A Practical Approach 1 st edition						Chapman and Hall 1988																		