Subject Code	AMA529					
Subject Title	Statistical Inference					
Credit Value	3					
Level	5					
Pre-requisite/ Co-requisite/ Exclusion	Pre-requisite: AMA528 Probability and Stochastic Models					
Objectives	To enable students to understand the theory and practice of statistical inference.					
Intended Learning Outcomes	 Upon completion of the subject, students will be able to: (a) Understand the concepts of random sampling, statistical inference and sampling distribution, and use basic sampling distributions. (b) Utilize the main methods of estimation to obtain estimators for unknown parameters. (c) Construct confidence intervals for unknown parameters. (d) Understand the concepts of test hypotheses and apply them. (e) Employ Bayesian approach to parameter estimation, hypothesis testing, and model selection. 					
Subject Synopsis/ Indicative Syllabus	 Review of probability and distributions. Estimation Theory: Point estimation, method of moments, percentile matching, maximum likelihood, sufficient statistics, exponential family, completeness, bias, variance, mean squared error, minimum variance unbiased estimator, Cramer-Rao lower bound, Fisher's information, Rao-Blackwell theorem, asymptotic distributions, interval estimation, pivotal quantity method, large-sample confidence intervals. Hypothesis Testing: Neyman-Pearson lemma, significance and power, likelihood ratio test, and information criteria. Bayesian Statistics: Bayes estimation, hypothesis testing, and model selection. 					
Teaching/Learning Methodology	The subject will be delivered mainly through lectures and tutorials. The teaching and learning approach is mainly problem-solving oriented. The approach aims at the development of mathematical techniques and how the techniques can be applied to solving problems. Students are encouraged to adopt a deep study approach by employing high level cognitive strategies, such as critical and evaluative thinking, relating, integrating and applying theories to practice.					

Assessment Methods in Alignment with Intended Learning Outcomes	Specific assessment methods/tasks	5				ect learning outcomes (Please tick as		
Jucomes			a	b	с	d	e	
	1. Assignments	12%	~	~	~	~	~	
	2. Mid-term test	28%	~	~	~			
	3. Examination	60%	~	~	~	~	~	
	Total	100 %						
	Continuous Assessme written examination is				nd a mi	d-term	test. A	
Student Study Effort Required	Class contact:							
	Lecture				26 Hrs.			
	Tutorial				13 Hrs.			
	Other student study effort:							
	 Assignment/Mini-project 				35 Hrs.			
	 Self-study 				63 Hrs.			
	Total student study ef		137 Hrs.					
Reading List and References	t and Hogg, R.V., Introduction to Mathemati McKean, J.W. and Statistics, 7th Edition Craig, A.T.				Pearson / Prentice Hall, 2013			
	Casella, G. and Berger, R.L.	Statistical Infer 2nd Edition		Duxbury / Thomson Learning, 2002				
	Hogg, R.V. and Tanis, E.A.	Probability and Inference, 8th I	cal	Prentice Hall, 2009				
	Garthwaite, P.H., Jolliffe, I. and Jones, B.	Statistical Infer 2nd Edition		Oxford University Press, 2002				
	Mood, A.M., Graybill, F.A. and Boes, D.C.	Introduction to Statistics, 3rd E	McGraw-Hill, 1974					