

Module code	SM-4331		
Module Title	Advanced Statistics		
Degree/Diploma	Bachelor of Science (Mathematics)		
Type of Module	Major Option		
Modular Credits	4	Total student Workload	10 hours/week
		Contact hours	4 hours/week
Prerequisite	SM-2205 Intermediate Statistics		
Anti-requisite	None		
Aims			
This module aims to broaden the student's skills in sampling techniques, experimental design, non-parametric methods, inference and multivariate analysis.			
Learning Outcomes			
<i>On successful completion of this module, a student will be expected to be able to:</i>			
Lower order :	40%	<ul style="list-style-type: none"> - become familiar with several statistical analysis techniques - understand general principles of model/experimental design 	
Middle order :	40%	<ul style="list-style-type: none"> - choose appropriate statistical methods for his/her analysis and be able to correctly interpret statistical results - understand the concepts of probability and sampling, and be able to apply this knowledge to calculate elementary probabilities and define confidence intervals - effectively communicate statistical results orally and in writing - understand and employ advanced statistical methods such as the analysis of variances, t-test, F-test to practical situations 	
Higher order:	20%	<ul style="list-style-type: none"> - undertake an individual research project and be able to apply the appropriate statistical techniques to evaluate data and test a hypothesis 	
Module Contents			
<ul style="list-style-type: none"> - Sampling: Simple random sampling; estimation of mean and proportion; error bounds and determination of sample size; stratified sampling; estimation, optimal allocations and optimal number of strata. - Experimental Designs: Completely randomized design, randomized block design, Latin square design and efficiency of a design. - Nonparametric Method. - Inference. - Multivariate Analysis. 			
Assessment	Formative assessment	Tutorial and feedback.	
	Summative assessment	Examination: 60% Coursework: 40% - 2 class tests (40%)	