

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