Module code	SM-2205			
Module Title	Intermediate Statistics			
Degree/Diploma	Bachelor of Science (Mathematics)			
Type of Module	Major Core			
Modular Credits	4	**Total student Workload**	10	hours/week
		Contact hours	4	hours/week
Prerequisite	SM-1201 Mathematical Methods for the Sciences			
Anti-requisite	BB-1102 Business Statistics SM-2403 Introductory Statistic			

Aims

The module is designed for students to understand the fundamental principles of probability and statistics and to apply these techniques in real world problems.

Learning Outcomes

On successful completion of this module, a student will be expected to be able to:

Lower order :	30%	- understand the basic principles of descriptive and inferential statistics and various distributions
Middle order :	60%	- analyse various categorical and numerical data
Higher order:	10%	- interpret the results of analyses - work independently and in a team

Module Contents

- Descriptive statistics, tables and graphs.
- Probability, discrete probability distributions such as Bernoulli, discrete uniform, binomial, hypergeometric, Poisson, geometric and negative binomial. Expected values and standard deviation of discrete random variables.
- Continuous probability distributions such as uniform, exponential, gamma, beta and normal. Expected values and standard deviation of continuous random variables.
- Approximation results including Chebyshev's inequality, Normal and Poisson approximations to the binomial distribution.
- Statistical inference: sampling distributions, central limit theorem, estimation and confidence intervals of means, proportions and variances, hypothesis tests for means, proportions and variances.
- Joint, marginal and conditional distributions for discrete and continuous random variables; conditional expectation, covariance and correlation for jointly distributed random variables; bivariate normal distribution and related concepts.
- Linear regression, confidence intervals and tests of hypothesis for the slope and intercept parameters, prediction and confidence intervals for the predicted value of the dependent variable for a given value of the independent variable.

Assessment	Formative assessment	Tutorial and feedback.
	Summative assessment	Examination: 60%
		Coursework: 40% - 2 tests (40%)