Module code	SM-2204			
Module Title	Numerical Analysis			
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	None			

Aims

This module covers the methodologies of numerical analysis. The aim is to introduce students to a mathematical tool that is an alternative to analytical methods and is commonly used for problem-solving in Applied Mathematics, Engineering Mathematics and Physical Sciences.

Learning Outcomes

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

Lower order :	30%	- understand the difference between numerical methods and analytical method
Middle order :	60%	- master the various methodologies of numerical analysis - able to identify the effectiveness and suitability of each numerical method depending on the problem - good understanding of using computer software that can be used to assist in the process of solving
Higher order:	10%	- have an understanding of which computer software is suitable for different problems

Module Contents

- Revision of possible sources of numerical error, approximation to numbers, error propogation and generation, floating point representation.
- Approximating function, Nonlinear equations.
- System of linear equations, Eigenvalue problem.
- Finite differences, Interpolation, Curve Fitting
- Numerical differentiation, Numerical Integration
- Ordinary Differential Equations, mathematical computer software

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