

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			
<p>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.</p>			
Learning Outcomes			
<i>On successful completion of this module, a student will be expected to be able to:</i>			
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			
<ul style="list-style-type: none"> - Revision of possible sources of numerical error, approximation to numbers, error propagation 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%)	