Module code	SM-2201		
Module Title	Ordinary Differential Equation and its Applications		
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	None		
Anti-requisite	None		

Aims

This module covers the methodologies of solving various types of *ordinary* differential equation. It introduce students to many applications of *ordinary* differential equations that relate to other disciplines in the social, medical, biological, physical sciences and other areas.

Learning Outcomes

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

Lower order :	30%	- Understand the difference of Ordinary and Partial Differential Equation. - Understand the mathematical terms frequently used (for example: *behaviour* of the solutions of differential equations) and the important Theorems. - Understand the graphical representation of solutions of Ordinary Differential Equation (ODE)
Middle order :	60%	- mastering the various methodologies of ODE - skilful in acknowledging and identifying which method is suitable for the various types of ODE. - understand the applications of ODE - mastering Laplace Transform method as an alternative to analytical method
Higher order:	10%	- able to use the software *Mathematica* to solve ODE and to double check the solutions found by solving with various analytical methods.

Module Contents

 Classification of differential Equations and Graphical representation of the solutions of ordinary
   Differential Equations (ODE).
 - Solving first- order ODE. Applications of first order ODE.
 -Linear second order and higher ODE. Applications of second order ODE.
 -Laplace transform: definition and properties, inverse transform, initial value problems, step functions
   and delayed functions.
 - Use of mathematical computer software (Mathematica)

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