PROGRAMME NAME: BSc Mathematics	
COURSE NAME: Differential Equations (with Practicals)	
SEMESTER DURATION :July to December	

WEEK	TOPIC(S)	TEACHING METHODOLOGY ADOPTED/ CONTINUOUS INTERNAL EVALUATION
1	First order ordinary differential equations: Basic concepts and ideas, First order exact differential equation	Lectures
2	Integrating factors and rules to find integrating factors	Demonstrations
3	Linear equations and Bernoulli equations, Orthogonal trajectories and oblique trajectories	Discussions
4	Linear equations and Bernoulli equations, Orthogonal trajectories and oblique trajectories	Tutorials
5	Solving a differential equation by reducing its order	Self –Instruction
6	Linear homogenous equations with constant coefficients	Presentation
7	Linear non-homogenous equations, The method of undetermined coefficients.	Case Study
8	The method of variation of parameters	Assignment
9	The Cauchy-Euler equation, Simultaneous differential equations	Lectures
10	Partial differential equations: Basic Concepts and definitions, Mathematical problems; First order equations: Classification and construction	Self –Instruction
11	Geometrical interpretation, Method of characteristics	Assignment
12	General solutions of first order partial differential equations	Discussion
13	Canonical forms and method of separation of variables for first order partial differential equations	Tutorials
14	Second order partial differential equations: Classification, Reduction to canonical forms, With constant coefficients, General solutions	Case Study

Course Objectives: This course includes a variety of methods to solve ordinary and partial differential equations with basic applications to real life problems. It provides a solid foundation to further in mathematics, sciences and engineering through mathematical modeling .

Course Learning Outcomes : This course will enable the students to:

i)   Visualize the space n in terms of vectors and the interrelation of vectors with matrices, and their application to computer graphics.

ii)   Learn about vector spaces, linear transformations, transition matrix and similarity.

iii)   Find approximate solution of inconsistent system of linear equations.