Programme: Diploma Class: B.Sc.	Year: II	Semester: III

Subject: Mathematics

Course Code: **Course Title: Differential Equations**

Course Outcome	CO1: Imparting knowledge to understand linear ordinary differential equations of first and second order. CO2: Applying different methods to solve various types of differential equations. CO3: Basic knowledge of linear and nonlinear partial differential equation of first order and their solutions.

Unit No.	Course Content	Hours
I	Geometrical meaning of a differential equation. Exact differential equations, integrating factors. First order higher degree equations solvable for x,y,p, Lagrange's equations, Clairaut's equations. Equation reducible to Clairaut's form. Singular solutions.	12
II	Linear differential equations of second order: Reduction to normal form. Transformation of the equation by changing the dependent variable/ the independent variable. Solution by operators of non-homogeneous linear differential equations. Reduction of order of a differential equation. Method of variations of parameters. Method of undetermined coefficients.	12
III	Ordinary simultaneous differential equations. Solution of simultaneous differential equations involving operators x (d/dx) or t (d/dt) etc. Simultaneous equation of the form dx/P = dy/Q = dz/R. Total differential equations. Condition for Pdx + Qdy +Rdz = 0 to be exact. General method of solving Pdx + Qdy + Rdz = 0 by taking one variable constant. Method of auxiliary equations.	12
IV	Linear partial differential equation: Formation of first order PDE, Cauchy's problems for the first order equations, Solution by Lagrange's Method.,	12
V	Non-linear partial differential equation: Formation of first order PDE, Solution by Charpit's Method, Jacobi's method.	12

Suggested Readings:

1. M.D.Raisinghania: Ordinary and Partial Differential Equations (S. Chand)
2. Shepley L. Ross:Differential Equations (Wiley India)
3. I. N. Sneddon: Elements of Partial Differntial Equations (Dover books on Mathematics)
4. S G Deo, V Raghavendra, RKar, V Laksmikanthan : Text book of Ordinary Differential Equations (McGraw Hill Education)
5. Suggested digital platform:NPTEL/SWAYAM/MOOCs

Mapping of course outcomes with program outcomes & program specific outcomes

CO's No.	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4
CO1	3	3	2	3	1	2	3	3	3
CO2	3	3	3	3	1	2	3	3	3
CO3	3	3	3	3	1	3	3	3	3