Curriculum Plan: B.Sc (Physical Science) (Semester III)
DSC-A3, Differential Equations (2024-25)

Dr. Mohd Nadeem Assistant Professor Department of Mathematics Kalindi College University of Delhi Delhi- 110008 **E- mail**: mohdnadeem.jmi@gmail.com		**Marks Distribution**	**Theory** -90
			IA+CA-30+40
		Classes Assigned	**Theory: 3 per week**

Reference		**References:** 1. Myint-U, Tyn and Debnath, Lokenath (2007). Linear Partial Differential Equations for Scientist and Engineers (4th ed.). Birkhäuser. Indian Reprint. 2. Ross, Shepley L. (1984). Differential Equations (3rd ed.). John Wiley & Sons. **Suggestive Readings** ● Edwards, C. Henry, Penney, David E., & Calvis, David T. (2015). Differential Equations and Boundary Value Problems: Computing and Modeling (5th ed.). Pearson Education. ● Kreyszig, Erwin. (2011). Advanced Engineering Mathematics (10th ed.). Wiley India. ● Sneddon I. N. (2006). Elements of Partial Differential Equations. Dover Publications.

Section	**Week**	**Topics**
	1st **week**	First order ordinary differential equations: Basic concepts and ideas, First order Exact differential equations,
	2nd **week**	Integrating factors and rules to find integrating factors, Linear equations and Bernoulli equations, Initial value problems,
	3rd **week**	Applications of first order differential equations: Orthogonal trajectories and Rate problems;
	4th **week**	Basic theory of higher order linear differential equations, Wronskian and its properties.
	5th **week**	**Assignment submission and class test scheduled**

	6ᵗʰ week	Linear homogeneous equations with constant coefficients
	7ᵗʰ week	, Linear non-homogeneous equations, Method of undetermined coefficients, Method of variation of parameters
	8ᵗʰ week	, Two-point boundary value problems, Cauchy-Euler equations,
	9ᵗʰ week	System of linear differential equations.
	10ᵗʰ week	Classification and Construction of first-order partial differential equations
	Semester break and Home Exam	
	11ᵗʰ week	, Method of characteristics and general solutions of first-order partial differential equations
	12ᵗʰ week	, Canonical forms and method of separation of variables for first order partial differential equations;
	13ᵗʰ week	Classification and reduction to canonical forms of second-order linear partial differential equations and their general solutions.,
	14ᵗʰ week	Classification and reduction to canonical forms of second-order linear partial differential equations and their general solutions.,
	15ᵗʰ week	Classification and reduction to canonical forms of second-order linear partial differential equations and their general solutions.
Dispersal of classes, preparation leave and practical examination		