



Indraprastha College for Women University of Delhi

Work Plan for ODD SEMESTER – 2026

Course Name:	B.Sc.(H)
Paper Title:	Differential Equation
Unique Paper Code:	2352572301
Semester:	III
Faculty:	D.Vijay Kumar Tripathi
Year:	2026-27

Work Plan			
Unit No.	Learning Objective	Lecture No.	Topics to be Covered
I	Ordinary Differential Equation	1	First order ordinary differential equations: Basic concepts and ideas
		2	First order ordinary differential equations: Basic concepts and ideas
		3	First order exact differential equations
		4	Integrating factors and rules to find integrating factors
		5	Integrating factors and rules to find integrating factors
		6	Linear equations and Bernoulli equations
		7	Initial Value Problems
		8	Applications of first order differential equations
		9	Orthogonal trajectories and Rate Problems
		10	Basic theory of higher order linear differential equations
		11	Basic theory of higher order linear differential equations
		12	Wronskian and its properties.
II	Explicit Methods of Higher order Linear Differential Equations	13	Linear homogeneous equations with constant coefficients
		14	Linear homogeneous equations with constant coefficients
		15	Linear Non-homogeneous equations
		16	Method of undetermined coefficients

		17	Method of undetermined coefficients
		18	Method of variation of parameters
		19	Method of variation of parameters
		20	Two-point boundary value problems
		21	Two-point boundary value problems
		22	Cauchy- Euler equations
III	First order and second order Partial Differential Equation	23	Classification and construction of first-order partial differential equations
		24	Method of general solution of of first-order partial differential equations
		25	Systems of linear differential equations
		26	Canonical forms and Method of separation of variables for first order PDE
		27	Classification and reduction to canonical forms of second order linear partial differential equations and their general solutions
		28	Revision

Unit	Contents/Syllabus
I	Ordinary Differential Equations First order ordinary differential equations: Basic concepts and ideas, First order Exact differential equations, Integrating factors and rules to find integrating factors, Linear equations and Bernoulli equations, Initial value problems, Applications of first order differential equations: Orthogonal trajectories and Rate problems; Basic theory of higher order linear differential equations, Wronskian and its properties.
II	Explicit Methods of Solving Higher-Order Linear Differential Equations Linear homogeneous equations with constant coefficients, Linear non-homogeneous equations, Method of undetermined coefficients, Method of variation of parameters, Two-point boundary value problems, Cauchy-Euler equations, System of linear differential equations.
III	First and Second Order Partial Differential Equations Classification and Construction of first-order partial differential equations, Method of characteristics and general solutions of first-order partial differential equations, Canonical forms and method of separation of variables for first order partial differential equations; Classification and reduction to canonical forms of second-order linear partial differential equations and their general solutions.
S. No.	Name of Authors/Books/Publishers
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.

3.	● 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
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	Paper Components		
Credits	Lecture (L)	Tutorial (T)	Practical (P)
	3	1	0
Assessment Scheme			
S.No.	Component	Marking Scheme	Total Marks
1	Internal Assessment • Assignment • Class Test • Attendance		30
		12	
		12	
		6	
2.	Continuous Assessment (Tutorial) • Activity 1 • Activity 2 • Attendance		40
		20	
		15	
		5	
3.	Practical • Continuous Assessment • End Term Written/Practical Exam • Viva		NA
4.	End Semester Examination		90