Indraprastha College for Women
University of Delhi

Course Name:	B.A.(Prog.)
Paper Title:	Differential Equations
Unique Paper Code:	2352572301
Semester:	III
Faculty(s):	Dr. Sulekha Rani
Year:	2024

Work Plan

Period	Unit No.	Learning Objective	Topics to be Covered
1st Aug -3rd Aug	I	● Ordinary and partial differential equations. ● Basic theory of higher order linear differential equations, Wronskian and its properties. ● Various techniques to find the solutions of above differential equations which provide a basis to model complex real-world situations.	First order ordinary differential equations: Basic concepts and ideas. Integrating factors and rules to find integrating factors
5th Aug-10th Aug	I	● Ordinary and partial differential equations. ● Basic theory of higher order linear differential equations, Wronskian and its properties. ● Various techniques to find the solutions of above differential equations which provide a basis to model complex real-world situations.	First order ordinary differential equations: Basic concepts and ideas. Integrating factors and rules to find integrating factors
12th Aug-17th Aug	I	● Ordinary and partial differential equations. ● Basic theory of higher order linear differential equations, Wronskian and its properties. ● Various techniques to find the solutions of above differential equations which provide a basis to model complex real-world situations.	Linear equations and Bernoulli equations. Initial Value Problems. Applications of first order differential equations. Orthogonal trajectories and Rate Problems
19th Aug-24th Aug	II	● Ordinary and partial differential equations.	Basic theory of higher order linear differential equations. Wronskian and its properties.

		● Basic theory of higher order linear differential equations, Wronskian and its properties. ● Various techniques to find the solutions of above differential equations which provide a basis to model complex real-world situations.	
26th Aug-31st Aug	II	● Ordinary and partial differential equations. ● Basic theory of higher order linear differential equations, Wronskian and its properties. ● Various techniques to find the solutions of above differential equations which provide a basis to model complex real-world situations.	Basic theory of higher order linear differential equations. Wronskian and its properties.
2nd Sep-7th Sep	II	● Ordinary and partial differential equations. ● Basic theory of higher order linear differential equations, Wronskian and its properties. ● Various techniques to find the solutions of above differential equations which provide a basis to model complex real-world situations.	Linear homogeneous equations with constant coefficients. Linear Non-homogeneous equations. Method of undetermined coefficients
9th Sep-14th Sep	II	● Ordinary and partial differential equations. ● Basic theory of higher order linear differential equations, Wronskian and its properties. ● Various techniques to find the solutions of above differential equations which provide a basis to model complex real-world situations.	Linear homogeneous equations with constant coefficients. Linear Non-homogeneous equations. Method of undetermined coefficients
16th Sep-21st Sep	II	● Ordinary and partial differential equations. ● Basic theory of higher order linear differential equations, Wronskian and its properties. ● Various techniques to find the solutions of above differential equations which provide a basis to model complex real-world situations.	Method of variation of parameters. Two-point boundary value problems. Cauchy- Euler equations. Systems of linear differential equations.
23rd Sep-28th Sep	II	● Ordinary and partial differential equations. ● Basic theory of higher order linear differential equations, Wronskian and its properties. ● Various techniques to find the solutions of above differential equations which provide a basis to model complex real-world situations.	Method of variation of parameters. Two-point boundary value problems. Cauchy- Euler equations. Systems of linear differential equations.

30th Sep-5th Oct	III	● Ordinary and partial differential equations. ● Basic theory of higher order linear differential equations, Wronskian and its properties. ● Various techniques to find the solutions of above differential equations which provide a basis to model complex real-world situations.	Classification and Construction of first-order partial differential equations. Method of characteristics. general solutions of first-order partial differential equations
7th Oct-12th Oct	III	● Ordinary and partial differential equations. ● Basic theory of higher order linear differential equations, Wronskian and its properties. ● Various techniques to find the solutions of above differential equations which provide a basis to model complex real-world situations.	Classification and Construction of first-order partial differential equations. Method of characteristics. general solutions of first-order partial differential equations
14th Oct-19th Oct	III	● Ordinary and partial differential equations. ● Basic theory of higher order linear differential equations, Wronskian and its properties. ● Various techniques to find the solutions of above differential equations which provide a basis to model complex real-world situations.	Canonical forms. Method of separation of variables for first order partial differential equations
21st Oct-26th Oct	III	● Ordinary and partial differential equations. ● Basic theory of higher order linear differential equations, Wronskian and its properties. ● Various techniques to find the solutions of above differential equations which provide a basis to model complex real-world situations.	Canonical forms. Method of separation of variables for first order partial differential equations
28th Oct-2nd Nov			MID SEMESTER BREAK
4th Nov-9th Nov	III	● Ordinary and partial differential equations. ● Basic theory of higher order linear differential equations, Wronskian and its properties. ● Various techniques to find the solutions of above differential equations which provide a basis to model complex real-world situations.	Classification and reduction to canonical forms of second-order linear partial differential equations and their general solutions.
11th Nov-16th Nov	III	● Ordinary and partial differential equations. ● Basic theory of higher order linear differential equations, Wronskian and its properties. ● Various techniques to find the solutions of above differential equations which provide a basis	Classification and reduction to canonical forms of second-order linear partial differential equations and their general solutions.

		to model complex real-world situations.	
18th Nov-23rd Nov			Revision
25th Nov-27th Nov			Revision
28th Nov	DISBERSAL OF CLASSES		

Unit	TOPICS
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.