

NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Mathematics - NOC:Partial Differential Equations (2025)

Subject Co-ordinator - Prof. Kaushik Bal

Co-ordinating Institute - IIT Kanpur

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

- Lecture 1 - Periodic Functions - Part A
- Lecture 2 - Fourier Series: Idea - Part B
- Lecture 3 - Convergence of Fourier Series - Part C
- Lecture 4 - Fourier Series of Arbitrary Period - Part A
- Lecture 5 - Half Range Fourier Extension - Part B
- Lecture 6 - Addendum 'Double Fourier Series' - Part C
- Lecture 7 - Sturm Liouville Problem: An Introduction
- Lecture 8 - Behavior of Regular Sturm-Liouville System - Part I
- Lecture 9 - Behavior of Regular Sturm-Liouville System - Part II
- Lecture 10 - Behavior of Regular Sturm-Liouville Problem - Part III
- Lecture 11 - Basics of Calculus - Part 1
- Lecture 12 - Basics of Calculus - Part 2
- Lecture 13 - Introduction to PDEs
- Lecture 14 - First order PDE: Classification and Construction
- Lecture 15 - Geometry of First order PDE and Method of Characteristics
- Lecture 16 - Canonical form for First order PDE
- Lecture 17 - Separation of Variable for First order PDE
- Lecture 18 - Method of Characteristics: Existence and Uniqueness
- Lecture 19 - Classification of Second order Linear PDE
- Lecture 20 - Canonical Form
- Lecture 21 - Canonical Form Examples
- Lecture 22 - Elliptic Equations: Boundary Conditions
- Lecture 23 - Laplace Equation: Fundamental Solution
- Lecture 24 - Maximum Principle for Laplacian
- Lecture 25 - Separation of Variable Formula for Laplace Equation
- Lecture 26 - Poisson Equation with Dirichlet and Neumann Boundary
- Lecture 27 - Wave Equation: Separation of Variable
- Lecture 28 - Wave Equation: D'Alembert Formula
- Lecture 29 - Nonhomogeneous Wave Equation

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- Lecture 30 - Heat Equation: Fundamental Solution and Maximum Principle
- Lecture 31 - Heat Equation: Separation of Variable and Uniqueness
- Lecture 32 - Nonhomogeneous Equations