

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

NPTEL Video Course - Mathematics - NOC:Ordinary and Partial Differential Equations and Applications

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Co-ordinating Institute - IIT - Roorkee

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

Lecture 1 - Introduction to differential equations - I
Lecture 2 - Introduction to differential equations - II
Lecture 3 - Existence and uniqueness of solutions of differential equations - I
Lecture 4 - Existence and uniqueness of solutions of differential equations - II
Lecture 5 - Existence and uniqueness of solutions of differential equations - III
Lecture 6 - Existence and uniqueness of solutions of a system of differential equations
Lecture 7 - Linear System
Lecture 8 - Properties of Homogeneous Systems
Lecture 9 - Solution of Homogeneous Linear System with Constant Coefficients - I
Lecture 10 - Solution of Homogeneous Linear System with Constant Coefficients - II
Lecture 11 - Solution of Homogeneous Linear System with Constant Coefficients - III
Lecture 12 - Solution of Non-Homogeneous Linear System with Constant Coefficients
Lecture 13 - Power Series
Lecture 14 - Uniform Convergence of Power Series
Lecture 15 - Power Series Solution of Second Order Homogeneous Equations
Lecture 16 - Regular singular points - I
Lecture 17 - Regular singular points - II
Lecture 18 - Regular singular points - III
Lecture 19 - Regular singular points - IV
Lecture 20 - Regular singular points - V
Lecture 21 - Critical points
Lecture 22 - Stability of Linear Systems - I
Lecture 23 - Stability of Linear Systems - II
Lecture 24 - Stability of Linear Systems - III
Lecture 25 - Critical Points and Paths of Non-linear Systems
Lecture 26 - Boundary value problems for second order differential equations
Lecture 27 - Self - adjoint Forms
Lecture 28 - Sturm - Liouville problem and its properties
Lecture 29 - Sturm - Liouville problem and its applications

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- Lecture 30 - Green's function and its applications - I
- Lecture 31 - Green's function and its applications - II
- Lecture 32 - Origins and Classification of First Order PDE
- Lecture 33 - Initial Value Problem for Quasi-linear First Order Equations
- Lecture 34 - Existence and Uniqueness of Solutions
- Lecture 35 - Surfaces orthogonal to a given system of surfaces
- Lecture 36 - Nonlinear PDE of first order
- Lecture 37 - Cauchy method of characteristics - I
- Lecture 38 - Cauchy method of characteristics - II
- Lecture 39 - Compatible systems of first order equations
- Lecture 40 - Charpit's method - I
- Lecture 41 - Charpit's method - II
- Lecture 42 - Second Order PDE with Variable Coefficients
- Lecture 43 - Classification and Canonical Form of Second Order PDE - I
- Lecture 44 - Classification and Canonical Form of Second Order PDE - II
- Lecture 45 - Classification and Characteristic Curves of Second Order PDEs
- Lecture 46 - Review of Integral Transforms - I
- Lecture 47 - Review of Integral Transforms - II
- Lecture 48 - Review of Integral Transforms - II
- Lecture 49 - Review of Integral Transforms - III
- Lecture 50 - Laplace Equation - I
- Lecture 51 - Laplace Equation - II
- Lecture 52 - Laplace and Poisson Equations
- Lecture 53 - One dimensional wave equation and its solution - I
- Lecture 54 - One dimensional wave equation and its solution - II
- Lecture 55 - One dimensional wave equation and its solution - III
- Lecture 56 - Two dimensional wave equation and its solution - I
- Lecture 57 - Solution of non-homogeneous wave equation
- Lecture 58 - Solution of homogeneous diffusion equation - I
- Lecture 59 - Solution of homogeneous diffusion equation - II
- Lecture 60 - Duhamel's principle