

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

NPTEL Video Course - Mathematics - NOC:Numerical Analysis

Subject Co-ordinator - Prof. R. Usha

Co-ordinating Institute - IIT - Madras

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

- Lecture 1 - Lesson 1 - Introduction, Motivation
- Lecture 2 - Lesson 2 - Part 1 - Mathematical Preliminaries, Polynomial Interpolation - 1
- Lecture 3 - Lesson 2 - Part 2 - Mathematical Preliminaries, Polynomial Interpolation - 1
- Lecture 4 - Lesson 3 - Part 1 - Polynomial Interpolation - 2
- Lecture 5 - Lesson 3 - Part 2 - Polynomial Interpolation - 2
- Lecture 6 - Lesson 4 - Polynomial Interpolation - 3
- Lecture 7 - Lagrange Interpolation Polynomial, Error In Interpolation - 1
- Lecture 8 - Lagrange Interpolation Polynomial, Error In Interpolation - 1
- Lecture 9 - Error In Interpolation - 2
- Lecture 10 - Error In Interpolation - 2
- Lecture 11 - Divide Difference Interpolation Polynomial
- Lecture 12 - Properties Of Divided Difference, Introduction To Inverse Interpolation
- Lecture 13 - Properties Of Divided Difference, Introduction To Inverse Interpolation
- Lecture 14 - Inverse Interpolation, Remarks on Polynomial Interpolation
- Lecture 15 - Numerical Differentiation - 1 Taylor Series Method
- Lecture 16 - Numerical Differentiation - 2 Method Of Undetermined Coefficients
- Lecture 17 - Numerical Differentiation - 2 Polynomial Interpolation Method
- Lecture 18 - Numerical Differentiation - 3 Operator Method Numerical Integration - 1
- Lecture 19 - Numerical Integration - 2 Error in Trapezoidal Rule Simpson's Rule
- Lecture 20 - Numerical Integration - 3 Error in Simpson's Rule Composite in Trapezoidal Rule, Error
- Lecture 21 - Numerical Integration - 4 Composite Simpsons Rule , Error Method of Undetermined Coefficients
- Lecture 22 - Numerical Integration - 5 Gaussian Quadrature (Two-Point Method)
- Lecture 23 - Numerical Integrature - 5 Gaussian Quadrature (Three-Point Method) Adaptive Quadrature
- Lecture 24 - Numerical Solution of Ordinary Differential Equation (ODE) - 1
- Lecture 25 - Numerical Solution Of ODE-2 Stability , Single-Step Methods - 1 Taylor Series Method
- Lecture 26 - Numerical Solution Of ODE-3 Examples of Taylor Series Method Euler's Method
- Lecture 27 - Numerical Solution Of ODE-4 Runge-Kutta Methods
- Lecture 28 - Numerical Solution Of ODE-5 Example For RK-Method Of Order 2 Modified Euler's Method
- Lecture 29 - Numerical Solution Of Ordinary Differential Equations - 6 Predictor-Corrector Methods (Adam-Moulton)

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- Lecture 31 - Numerical Solution Of Ordinary Differential Equations - 8
- Lecture 32 - Numerical Solution of Ordinary Differential Equations - 9
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- Lecture 34 - Numerical Solution of Ordinary Differential Equations - 11
- Lecture 35 - Root Finding Methods - 1 The Bisection Method - 1
- Lecture 36 - Root Finding Methods - 2 The Bisection Method - 2
- Lecture 37 - Root Finding Methods - 3 Newton-Raphson Method - 1
- Lecture 38 - Root Finding Methods - 4 Newton-Raphson Method - 2
- Lecture 39 - Root Finding Methods - 5 Secant Method, Method Of false Position
- Lecture 40 - Root Finding Methods - 6 Fixed Point Methods - 1
- Lecture 41 - Root Finding Methods - 7 Fixed Point Methods - 2
- Lecture 42 - Root Finding Methods - 8 Fixed Point Iteration Methods - 3
- Lecture 43 - Root Finding Methods - 9 Practice Problems
- Lecture 44 - Solution Of Linear Systems Of Equations - 1
- Lecture 45 - Solution Of Linear Systems Of Equations - 2
- Lecture 46 - Solution Of Linear Systems Of Equations - 3
- Lecture 47 - Solution Of Linear Systems Of Equations - 4
- Lecture 48 - Solution Of Linear Systems Of Equations - 5
- Lecture 49 - Solution Of Linear Systems Of Equations - 6
- Lecture 50 - Solution Of Linear Systems Of Equations - 7
- Lecture 51 - Solution Of Linear Systems Of Equations - 8 Iterative Method - 1
- Lecture 52 - Solution Of Linear Systems Of Equations - 8 Iterative Method - 2
- Lecture 53 - Matrix Eigenvalue Problems - 2 Power Method - 2
- Lecture 54 - Practice Problems