

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

NPTEL Video Course - Mathematics - Elementary Numerical Analysis

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Co-ordinating Institute - IIT - Bombay

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

Lecture 1 - Introduction
Lecture 2 - Polynomial Approximation
Lecture 3 - Interpolating Polynomials
Lecture 4 - Properties of Divided Difference
Lecture 5 - Error in the Interpolating polynomial
Lecture 6 - Cubic Hermite Interpolation
Lecture 7 - Piecewise Polynomial Approximation
Lecture 8 - Cubic Spline Interpolation
Lecture 9 - Tutorial 1
Lecture 10 - Numerical Integration
Lecture 11 - Composite Numerical Integration
Lecture 12 - Gauss 2-point Rule
Lecture 13 - Gauss 2-point Rule
Lecture 14 - Convergence of Gaussian Integration
Lecture 15 - Tutorial 2
Lecture 16 - Numerical Differentiation
Lecture 17 - Gauss Elimination
Lecture 18 - L U decomposition
Lecture 19 - Cholesky decomposition
Lecture 20 - Gauss Elimination with partial pivoting
Lecture 21 - Vector and Matrix Norms
Lecture 22 - Perturbed Linear Systems
Lecture 23 - Ill-conditioned Linear System
Lecture 24 - Tutorial 3
Lecture 25 - Effect of Small Pivots
Lecture 26 - Solution of Non-linear Equations
Lecture 27 - Quadratic Convergence of Newton's Method
Lecture 28 - Jacobi Method
Lecture 29 - Gauss-Seidel Method

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- Lecture 30 - Tutorial 4
- Lecture 31 - Initial Value Problem
- Lecture 32 - Multi-step Methods
- Lecture 33 - Predictor-Corrector Formulae
- Lecture 34 - Boundary Value Problems
- Lecture 35 - Eigenvalues and Eigenvectors
- Lecture 36 - Spectral Theorem
- Lecture 37 - Power Method
- Lecture 38 - Inverse Power Method
- Lecture 39 - Q R Decomposition
- Lecture 40 - Q R Method