

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

NPTEL Video Course - Mathematics - NOC:Scientific Computing using Matlab

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Co-ordinating Institute - IIT - Delhi

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

Lecture 1 - Introduction to Matlab
Lecture 2 - Plotting of Functions in Matlab
Lecture 3 - Symbolic Computation in Matlab
Lecture 4 - Functions definition in Matlab
Lecture 5 - In continuation of basics of Matlab
Lecture 6 - In continuation of basics of Matlab (Continued...)
Lecture 7 - Floating point representation of a number
Lecture 8 - Errors arithmetic
Lecture 9 - Iterative method for solving nonlinear equations
Lecture 10 - Bisection method for solving nonlinear equations
Lecture 11 - Order of Convergence of an Iterative Method
Lecture 12 - Regula-Falsi and Secant Method for Solving Nonlinear Equations
Lecture 13 - Raphson method for solving nonlinear equations
Lecture 14 - Newton-Raphson Method for Solving Nonlinear System of Equations
Lecture 15 - Matlab Code for Fixed Point Iteration Method
Lecture 16 - Matlab Code for Newton-Raphson and Regula-Falsi Method
Lecture 17 - Matlab Code for Newton Method for Solving System of Equations
Lecture 18 - Linear System of Equations
Lecture 19 - Linear System of Equations (Continued...)
Lecture 20 - Gauss Elimination Method for solving Linear System of Equation
Lecture 21 - Matlab Code for Gauss Elimination Method
Lecture 22 - LU Decomposition Method for Solving Linear System of Equations
Lecture 23 - LU Decomposition Method for Solving Linear System of Equations (Continued...)
Lecture 24 - Iterative Method for Solving Linear System of Equations
Lecture 25 - Iterative Method for Solving Linear System of Equations (Continued...)
Lecture 26 - Matlab Code for Gauss Jacobi Method
Lecture 27 - Matlab Code for Gauss Seidel Method
Lecture 28 - Matlab Code for Gauss Seidel Method
Lecture 29 - Power Method for Solving Eigenvalues of a Matrix

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- Lecture 30 - Power Method for Solving Eigenvalues of a Matrix (Continued...)
- Lecture 31 - Gershgorin Circle Theorem for Estimating Eigenvalues of a Matrix
- Lecture 32 - Gershgorin Circle Theorem for Estimating Eigenvalues of a Matrix
- Lecture 33 - Matlab Code for Power Method/ Shifted Inverse Power Method
- Lecture 34 - Interpolation
- Lecture 35 - Interpolation (Continued...)
- Lecture 36 - Interpolation (Continued...)
- Lecture 37 - Interpolating Polynomial Using Newton's Forward Difference Formula
- Lecture 38 - Error Estimates in Polynomial Approximation
- Lecture 39 - Interpolating Polynomial Using Newton's Backward Difference Formula
- Lecture 40 - Stirling's Formula and Lagrange's Interpolating Polynomial
- Lecture 41 - In Continuation of Lagrange's Interpolating Formula
- Lecture 42 - Interpolating Polynomial Using Newton's Divided Difference Formula
- Lecture 43 - Examples Based on Lagrange's and Newton's Divided Difference Interpolation
- Lecture 44 - Spline Interpolation
- Lecture 45 - Cubic Spline
- Lecture 46 - Cubic Spline (Continued...)
- Lecture 47 - Curve Fitting
- Lecture 48 - Quadratic Polynomial Fitting and Code for Lagrange's Interpolating Polynomial using Octave
- Lecture 49 - Matlab Code for Newton's Divided Difference and Least Square Approximation
- Lecture 50 - Matlab Code for Cubic Spline
- Lecture 51 - Numerical Differentiation
- Lecture 52 - Various Numerical Differentiation Formulas
- Lecture 53 - Higher Order Accurate Numerical Differentiation Formula For First Order Derivative
- Lecture 54 - Higher Order Accurate Numerical Differentiation Formula For Second Order Derivative
- Lecture 55 - Numerical Integration
- Lecture 56 - Trapezoidal Rule for Numerical Integration
- Lecture 57 - Simpson's 1/3 rule for Numerical Integration
- Lecture 58 - Simpson's 3/8 Rule for Numerical Integration
- Lecture 59 - Method of Undetermined Coefficients
- Lecture 60 - Octave Code for Trapezoidal and Simpson's Rule
- Lecture 61 - Taylor Series Method for Ordinary Differential Equations
- Lecture 62 - Linear Multistep Method (LMM) for Ordinary Differential Equations
- Lecture 63 - Convergence and Zero Stability for LMM
- Lecture 64 - Matlab/Octave Code for Initial Value Problems
- Lecture 65 - Advantage of Implicit and Explicit Methods Over Each other via Matlab/Octave Codes for Initial v