

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

NPTEL Video Course - Mechanical Engineering - NOC:Basics of Finite Element Analysis - II

Subject Co-ordinator - Prof. Nachiketa Tiwari

Co-ordinating Institute - IIT - Kanpur

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

Lecture 1 - Overview of the Course  
Lecture 2 - Fundamental principles  
Lecture 3 - Steps followed in FEA  
Lecture 4 - Weak Formulation  
Lecture 5 - Weak Formulation  
Lecture 6 - Assembling element level equations  
Lecture 7 - Errors in FEA Solution  
Lecture 8 - Measures of Errors in FEA Solution  
Lecture 9 - Convergence and Accuracy of Solution - Part I  
Lecture 10 - Convergence and Accuracy of Solution - Part II  
Lecture 11 - Convergence - Part I  
Lecture 12 - Convergence - Part II  
Lecture 13 - Numerical Integration Schemes - Part I  
Lecture 14 - Numerical Integration Schemes - Part II  
Lecture 15 - Approximations - Part I  
Lecture 16 - Approximations - Part II  
Lecture 17 - Approximations - Part III  
Lecture 18 - Gauss Quadrature  
Lecture 19 - Gaussian Quadrature review  
Lecture 20 - Gaussian Quadrature - Part II  
Lecture 21 - Gaussian Quadrature - Part III  
Lecture 22 - Newton-Cotes Quadrature  
Lecture 23 - Two dimensional FEM problem  
Lecture 24 - Two dimensional one variable FEM problem  
Lecture 25 - 2D Finite element problems with single variable (Model equation)  
Lecture 26 - 2D Finite element problems with single variable (Weak formulation)  
Lecture 27 - Elemental level 2D finite element equations  
Lecture 28 - Interpolation functions for 2D finite element problems  
Lecture 29 - Interpolation functions for linear triangular elements - Part I

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- Lecture 30 - Interpolation functions for linear triangular elements - Part II
- Lecture 31 - Interpolation functions for Triangular and Rectangular elements
- Lecture 32 - Evaluation of Stiffness and Force matrices
- Lecture 33 - Stiffness and Force matrices for Triangular element
- Lecture 34 - Stiffness and Force matrices for Rectangular element
- Lecture 35 - Boundary elements for Finite element Equations
- Lecture 36 - Boundary integrals for Triangular element
- Lecture 37 - Assembly of 2-D finite elements - Part I
- Lecture 38 - Assembly of 2-D finite elements - Part II
- Lecture 39 - 2-D Heat transfer problems - Part I
- Lecture 40 - 2-D Heat transfer problems - Part II
- Lecture 41 - Numerical integration schemes for 2-D problems
- Lecture 42 - Jacobian and transformation matrix for 2-D problems
- Lecture 43 - Numerical Integration Schemes for 2-D Problems
- Lecture 44 - Post-processing
- Lecture 45 - Plane Elasticity Problems
- Lecture 46 - Plane Elasticity Problems
- Lecture 47 - Plane Elasticity Problems
- Lecture 48 - Plane Elasticity Problems