

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

NPTEL Video Course - Civil Engineering - NOC:Plates and Shells

Subject Co-ordinator - Prof. Sudip Talukdar

Co-ordinating Institute - IIT - Guwahati

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

- Lecture 1 - Introduction, classification of plates and some useful relations
- Lecture 2 - Theory of thin plate bending
- Lecture 3 - Plate equations and boundary conditions with examples
- Lecture 4 - Exercises on the plate bending theory
- Lecture 5 - Simply supported plate subjected to distributed loading
- Lecture 6 - Simply supported plate subjected to concentrated load and couple
- Lecture 7 - Simply supported plate resting on elastic foundation and other examples
- Lecture 8 - General formulation for rectangular plate with two opposite edges simply supported
- Lecture 9 - Levy's solution for different loading and boundary conditions
- Lecture 10 - Rectangular plate with Levy's boundary condition subjected to edge moment
- Lecture 11 - Transformation of plate equation from rectangular co-ordinates to polar co-ordinates
- Lecture 12 - Axi-symmetrical bending of circular plate under pure moment and uniformly distributed load
- Lecture 13 - Examples in axisymmetrical bending of solid and annular plate
- Lecture 14 - Variational principle in plate problem
- Lecture 15 - Applications of Rayleigh-Ritz and Gallerkin's method
- Lecture 16 - Finite difference method in plate bending
- Lecture 17 - Plate subjected to inplane forces and transverse load
- Lecture 18 - Buckling load of rectangular plate with Navier's boundary condition
- Lecture 19 - Buckling load of rectangular with Levy's boundary condition
- Lecture 20 - Rayleigh-Ritz and Gallerkin method in buckling of plate
- Lecture 21 - Finite difference method in buckling of plate
- Lecture 22 - Introduction to shell structure and behavior of stretched membrane
- Lecture 23 - Classification of shell structure
- Lecture 24 - Stress resultants and couples in shells
- Lecture 25 - Membrane analysis of shells of surface of revolution
- Lecture 26 - Analysis of Spherical dome
- Lecture 27 - Some examples of axi-symmetrical cases in surface of revolution
- Lecture 28 - Membrane theory in pressure vessels
- Lecture 29 - Membrane theory in pressure vessel in the form a Torus and in a tank of arbitrary meridian

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- Lecture 30 - Membrane theory of hyperboloid of revolution: Application to cooling tower
- Lecture 31 - Differential Equations of Equilibrium in Cylindrical shell using membrane hypothesis
- Lecture 32 - Membrane Analysis of Cylindrical Shell roof subjected to self weight and snow load
- Lecture 33 - Circular Cylindrical Shell for Fourier Loading in a membrane state of stress
- Lecture 34 - Simplified Bending Theory of Cylindrical Shell-Beam and Arch theories
- Lecture 35 - General bending theory of cylindrical shell
- Lecture 36 - Some applications of symmetrical bending of circular cylindrical shell