

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

NPTEL Video Course - Mechanical Engineering - NOC:Strength of Materials - IITM

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Co-ordinating Institute - IIT - Madras

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

- Lecture 1 - Introduction to Strength of Materials - 1
- Lecture 2 - Introduction to Strength of Materials - 2
- Lecture 3 - Stress Component is Scalar
- Lecture 4 - Stress Vector
- Lecture 5 - Stress Tensor
- Lecture 6 - Equilibrium Conditions
- Lecture 7 - Mohr's Circle
- Lecture 8 - Proof of Mohr's Circle
- Lecture 9 - Principal Stresses
- Lecture 10 - Octahedral and Deviatoric Stresses and Principal Directions
- Lecture 11 - Free Surfaces
- Lecture 12 - Photoelasticity
- Lecture 13 - Strain
- Lecture 14 - State of Strain
- Lecture 15 - Strain Measurement
- Lecture 16 - Tension Test
- Lecture 17 - Stress Strain Relations
- Lecture 18 - Interrelations between Elastic Constants
- Lecture 19 - Thermal Strain
- Lecture 20 - Torsion 1 - Thought and Physical Experiments
- Lecture 21 - Torsion 2 - Mathematical Development
- Lecture 22 - Torsion 3 - Problem solving, Hollow shaft
- Lecture 23 - Bending 1 - Euler-Bernoulli Hypothesis
- Lecture 24 - Bending 2 - Flexure Formula
- Lecture 25 - Bending 3 - Engineering Analysis of Beams
- Lecture 26 - Bending 4 - Shear Stress in Beams
- Lecture 27 - Bending 5 - Composite Beams
- Lecture 28 - Bending 6 - Shear in I Beams and Shear Centre
- Lecture 29 - Bending 7 - Unsymmetrical Bending and Combined Loading

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- Lecture 30 - Review 1
- Lecture 31 - Deflection 1 - Moment-Curvature and Load Deflection
- Lecture 32 - Deflection 2 - Moment-Area Method
- Lecture 33 - Deflection 3 - Method of Superposition and Energy Method
- Lecture 34 - Deflection 4 - Fictitious Load Method
- Lecture 35 - Theories of Failure 1 - Overview
- Lecture 36 - Theories of Failure 2 - Yield surfaces, Mohr's Theory and Failure in Combined Loading
- Lecture 37 - Stability 1 - Governing Equations, Fixed-free and Pinned-pinned
- Lecture 38 - Stability 2 - Fixed-pinned, Fixed-fixed
- Lecture 39 - Review 2