Advanced Strength of Materials - Video course

Module 1 (1 hrs)
Introduction
Module 2 (10 hrs)
Stress and Strains in 3-D – Cauchy formula, Principal Stress, hydrostatic stress, deviatoric stress, stress transformations, Mohr circle, octahedral shear stress, strain energy densities, etc.
Module 3 (4 hrs)
Theories of failure
Module 4 (3 hrs)
Beam on elastic foundations
Module 5 (2 hrs)
Bending of curved beams – Crane Hooks & Chains
Module 6 (6hrs)
Torsion of Non-circular members, hollow members, thin walled sections; Membrane Analogy
Module 8 (5 hrs)
Columns -- Straight & initially curved columns, Rankine formula
Module 9 (3 hrs)
Energy Methods – Energy Theorems, Use of energy theories for calculating deflections, twists, solution to torsion (non-circular) problems
Module 10 (2 hrs)
Unsymmetrical bending, shear centre
Module 11 (4 hrs)
Introduction to Photoelasticity
TOTAL HOURS = 40
REQUIRE ONE R.A. FULL TIME

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Mechanical Engineering

Coordinators:

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