Theory of Elasticity & Plasticity: (PC1)

Module-1 :

Linear elasticity; stress, strain, constitutive relations, strain displacement relations, three dimensional stress and strain analysis, compatibility, stress and displacement functions.

Module 2:

Two dimensional problems in Cartesian and polar coordinates, description of an elasticity problem as a boundary value problem, bending of beams-cantilever and simply supported beam.

Module 3:

Torsion of rectangular bars including hollow sections, torsion of a circular and a rectangular section

Module-4: Elements of plasticity, failure & yield criterion, Equations of plasticity, plastic stress-strain relations, flow rule, velocity field, slip lines and plastic flow, incremental plasticity.

Books:

(1) S.P.Timoshenko & J.N.Goodier,"Theory of Elasticity", McGraw Hill-1970.
(2) M.Kachanov, "Theory of Plasticity", MIR Publication.
(3) C.R.Calladine, "Plasticity for Engineers", Ellis Horwood, Chichester,U.K.,1985