CIE 1001: MECHANICS OF SOLIDS [2 1 0 3]

Part-A: Mechanics of Rigid bodies

Resultant of coplanar concurrent and non-concurrent force system: Resolution, composition, moment of force, Varignons theorem, couple, application problems

Equilibrium of Coplanar concurrent and noncurrent force system: Conditions of equilibrium, Space and free body diagram, Lami's theorem - application problems

Support reaction, types of loading, friction - application problems.

Centroid and Moment of Inertia: Simple and composite areas, application problems

Part-B: Mechanics of Deformable bodies

Simple Stresses and Strains: Mechanical **properties** of materials, Hooke's law, modulus of elasticity, tension test on ductile and brittle materials, factor of safety, allowable stress, Stresses and deformations in tapering bars, stepped bars, Poisson's ratio, shear stress and shear strain, modulus of rigidity, relation between modulus of elasticity, modulus of rigidity and bulk modulus., application problems.

Statically indeterminate members - Compound bars, thermal stress

Stresses in thin cylinder: hoop, longitudinal and shear stresses; Change in dimensions due to the fluid pressure, joint efficiency and application problems

Shear force and bending moment diagrams: SFD and BMD for statically determinate beams

References:

1. Singer F.L., *"Engineering Mechanics"*, Harper & Row,1994

2. Bhavikatti & Rajasekharappa, *"Engineering Mechanics"*, New Age International, 2006

3. Pytel and Singer, *"Strength of Materials"*, Harper & Collins, 1987

4. Bhavikatti S.S., *"Strength of Materials"*, Vikas Publishers, 2005

5. Basavarajaiah & Mahadevappa, *"Strength of Materials"*, CBS Publishers, 2001