GATE Syllabus

Part I – ENGINEERING SCIENCE (XE)

Section–XE-D Solid Mechanics

tutorialspoint
SIMPLY EASY LEARNING

SECTION – XE-D: SOLID MECHANICS

Course Syllabus

- ➢ Equivalent force systems
- ➢ Free-body diagrams
- ➢ Equilibrium equations
- ➢ Analysis of determinate trusses and frames
- ➢ Friction
- ➢ Particle kinematics and dynamics
- ➢ Dynamics of rigid bodies under planar motion
- ➢ Law of conservation of energy
- ➢ Law of conservation of momentum
- ➢ Stresses and strains
- ➢ Principal stresses and strains
- ➢ Mohr's circle for plane stress and plane strain
- ➢ Generalized Hooke's Law
- ➢ Elastic constants
- ➢ Thermal stresses
- ➢ Theories of failure
- ➢ Axial, shear and bending moment diagrams
- ➢ Axial, shear and bending stresses
- ➢ Combined stresses
- ➢ Deflection (for symmetric bending)
- ➢ Torsion in circular shafts
- ➢ Thin walled pressure vessels
- ➢ Energy methods (Castigliano's Theorems)
- ➢ Euler buckling
- ➢ Free vibration of single degree of freedom systems