| **XE-D** | Solid Mechanics |
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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.