Course Name:
Theory of elasticity

Course Number:
20138

Credit:
3

Course Content (outline):

1. **Introduction**:

Tensors, Indicial Notations, Stress, Strain, Hooke's Law

2. **Plane Stress and Plane Strain:**

Equilibrium, Boundary Conditions, Compatibility, Stress Functions

3. **Two- Dimensional Problems in Rectangular Coordinates:**

Solution by Polynomials, Solution by Fourier Series

4. **Two- Dimensional Problems in Polar Coordinates:**

Stress and Strain in polar Coordinates, Stress Distribution Symmetrical about an Axis, Curved Bars, Edge Dislocation, Circular Holes, Straight Boundary, Wedge, Concentrated Force, Circular Disk, Generalized Solution, Dundurs Table, Half space

5. **General Topics and Theorems:**

Equilibrium, Compatibility, Displacements, Superposition, Strain Energy,

6. **Three Dimensional Problems:**

Navier's Displacement Equations of Motion, Stress Equations, Vector and Scalar Potentials

References:

- Timoshenko and Goodier, Sadd, Malvern,