Topics and Chapter Sections Covered for Test 2
Related homework: 4 – 7

1 Chapter 3 - Stress and Strain

Sections covered: 3.5 – 3.13

Topics Covered: The following topics are included:

1. Stress in circular torsion members
2. Stress in non-circular torsion members
3. Shear and moment in beams and the differential relationship
4. Shear and moment diagrams
5. Euler-Bernoulli beam theory for deriving stresses in beam.
6. Derivation of shear stress in beams
7. Use of flexural and shear stress in beam design
8. Composite beams
9. Two-dimensional stress-transformation
10. Principal normal stress and maximum shear stress
11. Mohr’s circle
12. Combined loading
13. Strain transformation, Mohr’s strain circle
14. Stress concentrations

2 Chapter 4 - Deflection and Impact

Sections covered: 4.1 – 4.5; Handouts 2–3

Topics Covered: The following topics are included:

1. Axial deflections - applications to statically indeterminate axial structures
2. Contribution of thermal stress to axial deformations
3. Use of equilibrium, constitutive and kinematic equations
4. Torsional twist angle - applications to statically indeterminate axial structures
5. Beam displacements - Determinate and indeterminate applications of integration and superposition