

Print Date: 7/15/14
Course Objectives/Course Outline
Spokane Community College

Course Title: Strength of Materials/Materials Science
Prefix and Course Number: CAD 253

Course Learning Outcomes:

By the end of this course, a student should be able to:

- Compute direct stresses in loaded members
- Design and analyze bolted, and welded connections, draw shear and moment diagrams.
- Compute torsion stress and strain in shafts
- Compute bending stress in beams
- Compute column stresses

Course Outline

- I. Stress, strain, and deformation
 - A. Physical properties of materials
 - B. Stress/strain diagrams
 - C. Critical design points
 - D. Stresses
 1. Axial
 2. Shear
 3. Torsion
 - E. Stress concentration
 - F. Thermal Stress
- II. Structural Members
 - A. Structural characteristics of members
 - B. Determination of centroid location
 - C. Moment of area
 - D. Moment of Inertia
- III. Power Transmission
 - A. Circular shafts
 - B. Shaft sizing
 - C. Material specification
- IV. Beam design
 - A. Beam design diagrams and formulas
 - B. Loads
 - C. Deflection
- V. Column design