Sinclair Community College
444 E. Third St.
Dayton, OH 45402

Master Syllabus

MET 2251 - Strength of Materials

Division: Science, Mathematics and Engineering

Department: Mechanical Engineering Technology

Credit Hour Total: 3.0 **Lecture Hrs:** 2.0 **Lab Hrs:** 2.0

Prerequisite(s): MET 2201 OR MEE 2101

Date Revised: June 2014

Course Description:

Stress and deformations, torsions, shear and moments in beams, stresses in beams, beam deflections, combined stresses. This course is algebra based. Two classroom, two lab hours per week.

General Education Outcomes:

- Oral Communication
- Written Communication
- Critical Thinking/Problem Solving
- Information Literacy

Course Outcomes:

Mechanical properties
Evaluate mechanical properties of a material with the tensile test.

Assessment Method: Locally developed exams
Performance Criteria: 70% or more of available points on exams

Maximum deflections
Find maximum deflections in beams.

Assessment Method: Locally developed exams
Performance Criteria: 70% or more of available points on exams

Mechanical members
Analyze members in tension, compression, shear, bending and torsion.

Assessment Method: Locally developed exams
Performance Criteria: 70% or more of available points on exams

Maximum stresses
Solve for maximum bending moments and stresses in beams.

Assessment Method: Locally developed exams
Performance Criteria: 70% or more of available points on exams

Stress analysis
Perform combined stress analysis using Mohr's Circle.

Assessment Method: Locally developed exams
Performance Criteria: 70% or more of available points on exams

Principal stresses
Find principal stresses for any state of stress.

Assessment Method: Locally developed exams
Performance Criteria: 70% or more of available points on exams

Outline:

Stress, strain and deformation in axially loaded members
Torsional shear stress and deformation
Direct shear stress
Stresses and deflection in beams
Effects of stress concentrations
Combined stresses and Mohr's Circle