

## 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

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### 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 Competency
- Written Communication Competency
- Critical Thinking/Problem Solving Competency
- Information Literacy Competency

### 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