

SYLLABUS  
PART I  
EDISON STATE COMMUNITY COLLEGE  
MET 212S APPLIED STRENGTH OF MATERIALS  
3 CREDIT HOURS

COURSE DESCRIPTION

Non-calculus based study of Hooke's law; axial, bending and shearing stresses; deflection and rotation; beams, columns, and tension members. Prerequisite: MET 125S.

COURSE GOALS

The student will:

Bloom's Level		Program Outcomes
3	1. Classify design stresses into compressive, tensile, shear, or some combination of these three.	2
3	2. Apply appropriate factors of safety to designs.	2, 6
3	3. Identify the concept of strain and calculate strain on a structural member under load.	2
3	4. Apply Hooke's law to find stress or strain in a design situation.	2
3	5. Use Poisson's ratio to find either axial or lateral strains.	2
1	6. Identify resources available for finding Poisson's ratio, Young's modulus, Ultimate strengths, and other parameters for various engineering materials.	2
2	7. Recognize where stress concentrations may occur in a design.	2
3	8. Calculate changes in length of, or stresses in structural members resulting from temperature changes.	2
5	9. Design riveted or welded joints.	2, 6
3	10. Size power transmission shafts.	2, 6
3	11. Construct shear and moment diagrams for design of structural beams and size those beams for the given design loadings.	2, 6
3	12. Calculate the deflection in a structural member under load.	2
3	13. Apply the three-moment equation to find support reactions of statically indeterminate beams.	2
5	14. Design for combined stresses using techniques such as Mohr's circle.	2, 6
5	15. Design columns of various materials using Euler's, or other industry-recommended formulas.	2, 6

CORE VALUES

The Core Values are a set of principles which guide in creating educational programs and environments at Edison State. They include communication, ethics, critical thinking, human diversity, inquiry/respect for learning, and interpersonal skills/teamwork. The goals, objectives, and activities in this course will introduce/reinforce these Core Values whenever appropriate.

TOPIC OUTLINE

1. Simple Stress and Strain
2. Torsion
3. Shear and Moment in Beams

4. Stresses in Beams and Beam Deflections
5. Restrained and Continuous Beams
6. Combined Stresses
7. Reinforced Beams
8. Columns
9. Riveted, Bolted, and Welded Connections
10. Inelastic Action