ENGR2230 - Mechanics of Materials

Credits:	3 (3/0/0)
Description:	This course provides an introduction to the study of stress, strain, deformation and failure of elastic bodies subjected to external forces. Topics include the relationships between the applied loads and the resulting stresses and deformations in an elastic body, stress-strain relations and the design of structural members subjected to known loads.
Prerequisites:	• ENGR2210
Corequisites:	
Pre/Corequisites*:	
Competencies:	1. Calculate the deflection of beams subjected to transverse loading. 2. Calculate stresses in thin-walled pressure vessels. 3. Apply the concepts learned to design and analyze members subjected to combined loadings. 4. Understand the transformation of stresses and strains, and be able to determine the maximum normal and shear stresses at a point and the planes on which they act. 5. Calculate stresses and strains in prismatic members subjected to bending and be able to calculate shear stresses in straight beams subjected to transverse loadings. 6. Evaluate the bending stresses in a straight beam subjected to bending moments and transverse forces, and draw shear force and bending moment diagrams. 7. Solve problems involving indeterminate shafts in torsion and axially loaded members. 8. Calculate stresses and strains in members of circular cross-section subjected to torsion, and design circular transmission shafts. 9. Understand the concepts of stress, strain, Hooke's law and mechanical properties of elastic materials, and be able to calculate stresses and strains in axially loaded members and the stresses due to a temperature change. 10. Draw free body diagrams and apply equilibrium equations to find the internal forces in solid bodies.
MnTC goal areas:	None

Can be taking as a Prerequisite or Corequisite.

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