EGR 246 - MECHANICS OF MATERIALS (3 CR.)

Course Description

Teaches concepts of stress, strain, deformation, internal equilibrium, and basic properties of engineering materials. Analyses axial loads, torsion, bending, shear and combined loading. Studies stress transformation and principal stresses, column analysis and energy principles. Lecture 3 hours per week.

General Course Purpose

The course will introduce the student to the fundamental principles of stress and strain relationships in structures. It will also provide techniques for handling transformation of stresses, deflection of beams. It will prepare the student for structural design and the ability to progress to elasticity, shell and plate theories in advanced structures.

Course Prerequisites/Corequisites

Prerequisite: EGR 240

Course Objectives

- Upon completion of the course the student will be able to:
- Solve engineering problems in mechanics of deformable bodies
- Determining various stress and strain in members and simple structures
- Apply the different mechanical properties in design of structures
- Solve statically indeterminate problems
- Calculating principal stresses
- Identify the different criteria of failures of a structure
- Calculate beam deflection
- Apply the various means of insuring stability in the structure
- Design simple structures

Major Topics To Be Included

- Stress and strain analysis
- Torsional stress
- Shear and bending moment diagrams
- Normal and shear stresses in members
- Compound stresses
- Principal stresses and strain
- Beam deflection
- Statically indeterminate structures
- Buckling of columns