SUBJECT: **ME-206 Mechanics of Materials**

CREDIT HOURS: 2-1

CONTACT HOURS: 5 Hours per Week

TEXT BOOKS:

1.***Mechanics of Materials*** by E P Popov, Latest Ed, Prentice-Hall Inc

2. ***Mechanics of Materials*** by F P Beer, E R Johnson, Latest Ed

3. ***Strength of Materials,*** by J Alexendar, Latest Ed

4. ***Strength of Materials***,by Andrew Pytel,F.L.Singer,Latest Ed

REFERENCE BOOKS: ***Mechanics of Engineering Materia***ls by P P Crawford, Latest Ed

PREREQUISITE: ME 132 Engineering Statics

MODE OF TEACHING: Lectures, and Practical Lab Work

COURSE OBJECTIVES: This course is a foundation to many advanced techniques that allow engineers to design structures, predict failures and understand the physical properties of materials. Mechanics of Materials gives the student basic tools for stress, strain and strength analysis. Methods for determining the stresses, strains and bending produced by applied loads are learned. Engineering design concepts are integrated into the Mechanics of Materials course. The subject includes laboratory demonstrations on basic strength of materials.

COURSE OUTCOMES: At the end of the course students will be able to understanding physical properties of materials, strength and deformation in structures. They will be able to draw bending moment diagram and Mohr's circle and use it in stress strain analysis. They will have the understanding of the relation between stress and strain and transformations involved between them. They will be able to analyse the design of a mechanical structure with respect to strength and deformations involved in it after the application of load.

TOPICS COVERED:

- Concepts of stress and strain
- Axial loading
- Torsion
- Pure bending
- Shear Force and Bending Moment Diagrams
- Beams under transverse loading
- Transformation of stress and strain, biaxial stress
- Mohr's Circle