MIME 3130	Mechanics of Materials	3 Credit Hours
Prerequisites:	MIME 2101 and MIME 2120	
Goal	To extend the students knowledge in mechanics of material by providing the means of analyzing and designing various machines and load bearing structures.	

Objectives	Outcomes
The course should enable the student to:	The students should be able to:

Objectives

The course should enable the student to:

1. Grasp the basic concepts and notation involved in the mechanics of materials.
2. Realize how the various materials respond or react to the various types of stresses.
3. Conceive the basic principle used in mechanics of materials to solve engineering problems.
4. Know how to analyze and design machines and load –bearing structure

Outcomes

The students should be able to:

1. Define the generalized form of hooks law.
2. Differentiate between the various types of stresses namely: normal stress, shearing stress and bearing stress.
3. Distinguish between elastic and plastic behavior of a material.
4. Recognize the relations among load, shear, and bending moment for abeam under various boundary conditions.
5. Analyze statically determinate and indeterminate problems of beams.
6. Use strain rosette to characterize the state of strain at the point of measurement.
7. Construct Mhr's circle and apply it for the analysis of the transformation of plane strain and use this technique to solve problems.
8. Predict the deflection of beams by integration method and moment area method.
9. Formulate the differential equation of deformable body.
10. Recognize strain theory and small displacement theory and their application in three dimensional elasticity problems.
11. Set up the differential equation describing the elastic curve for a buckling of point's ended columns.
12. Analyze stress and resulting strain in members subjected to axial load and to twisting couples or torques.
13. Analyze a rectangular beam made of an elastoplastic material subjected to

	varying bending moment under various boundary conditions.
	14. Be familiar with the method used for analyze and design of machines and load bearing structures.
	15. Carry out laboratory experiments on struts and rotating fatigues