EGR 220 Engineering Statics

COURSE DESCRIPTION:

Prerequisites: PHY-251 **AND**

                    PHY-251 (with minimum grade C) **AND**

                    MAT-272 (Must be taken either prior to or at the same time as this course)

Corequisites: None

Offered: Spring

This course introduces the concepts of engineering based on forces in equilibrium. Topics include concentrated forces, distributed forces, forces due to friction, and inertia as they apply to machines, structures, and systems. Upon completion, students should be able to solve problems which require the ability to analyze systems of forces in static equilibrium.

This course has been approved for transfer under the Uniform Articulation Agreement (UAA - Associate in Engineering - A10500) and Independent Comprehensive Articulation Agreement (ICAA).

Course Hours per Week: Class, 3. Semester Hours Credit, 3.

LEARNING OUTCOMES:

Upon completing requirements for this course, the student will be able to:

1. Apply Newton's Law to Engineering problems.
2. Draw free-body diagrams to solve Engineering problems.
3. Formulate and solve the equations of equilibrium on 2D and 3D structures.
4. Calculate forces in truss member using method of joints and method of sections.
5. Calculate reaction forces in 2D and 3D structures.
6. Calculate internal forces and moments for simple structures
7. Calculate internal forces and moments on structures.
8. Draw shear force and bending moment diagrams for beams.
9. Calculate friction forces and their effects on rigid bodies.
10. Calculate fluid pressure forces and their effects on rigid bodies.
11. Calculate the centroid, center of gravity, moment of inertia and mass moment of inertia.

OUTLINE OF INSTRUCTION:

      Introduction, Engineering Paper, General Principles
2. Force and Vectors
3. Equilibrium of a Particle
4. Force System Resultant
5. Equilibrium of a Rigid Body
6. Structural Analysis
7. Internal Forces
8. Friction

9. Center of Gravity and Centroid
10. Fluid Pressure
11. Moments of Inertia

REQUIRED TEXTBOOK AND MATERIAL:
1.