NOVA COLLEGE-WIDE COURSE CONTENT SUMMARY
EGR 240 – STATICS (3 CR.)

Course Description

Introduces basic concepts of engineering mechanics, systems of forces and couples, equilibrium of particles and rigid bodies, and internal forces and analysis of structures, including SI and U.S. customary units. Includes trusses, frames, machines, beams, distributed forces, friction, and centroids. Lecture 3 hours. Total 3 hours per week.

General Course Purpose

This course prepares students for further studies in branches of engineering requiring mechanics.

Course Prerequisites/Corequisites

Prerequisites: EGR 120, EGR 121, or EGR 122. MTH 263 and PHY 241 (or old PHY 231).

Course Objectives

- Critical Thinking
    - Calculate the moment caused by a two- and three-dimensional force or system of forces acting on a rigid body.
    - Use a free body diagram and the equilibrium equations to determine the reactions at the supports of two- and three-dimensional structures.
    - Use free body diagrams and the equilibrium equations to analyze structures (e.g., trusses, frames, simple machines).
    - Determine internal loading in a member at a specific point.
    - Use the internal loading to determine the internal shear and moment along the length of a member and draw shear and bending moment diagrams.
    - Solve equilibrium problems involving dry friction.
    - Explain the concepts of static and kinetic friction.
- Quantitative Reasoning
    - Apply vector algebra to resolve two- and three-dimensional force systems.
    - Locate the centroids and center of mass of homogenous and non-homogenous areas, volumes, and masses. Use the centroid location techniques to analyze distributed loads.

Major Topics to be Included

- Vector algebra
- Resultant force systems
- Moment
- Free body diagrams
- Equilibrium equations
- Trusses and Frames
- Internal loading
- Shear and bending moment diagrams
- Static friction
- Centroids