Virginia Western Community College
EGR 140
Engineering Mechanics: Statics

Prerequisites
MTH 263 or equivalent

Course Description
Introduces mechanics of vector forces and space, scalar mass and time, including S.I. and U.S. customary units. Teaches equilibrium, free-body diagrams, moments, couples, distributed forces, centroids, moments of inertia analysis of two-force and multiforce members and friction and internal forces.
Students learn how to manipulate vector quantities in two dimensions and three dimensions. Once these concepts are understood, they are applied to solving statics problems of particles and extended rigid objects in two and three dimensions. Students learn to analyze forces and moments, and how to combine forces and moments. This course is foundational to many other mechanics courses in engineering.

Semester Credits: 3   **Lecture Hours:** 3   **Lab/Recitation Hours:** 0

Required Materials

Textbook
Engineering Mechanics: Statics plus Mastering Engineering with Pearson eText -- Standalone Access Card, 14/E, Author: HIBBELER, Pearson Prentice Hall, ISBN# 9780134160689, Format: National Bundle

Other Required Materials:
Calculator (TI-89 or higher preferred)
Access to Online Homework program associated with textbook:
(http://www.masteringengineering.com)

Course Outcomes

At the completion of this course, the student should be able to:

1. Manipulate (i.e., add and multiply) vector quantities.

2. Establish the forces and/or moments required to keep a Particle in equilibrium in two dimensions and three dimensions.

3. Establish the forces and/or moments required to keep an Extended Rigid Object in equilibrium in two dimensions and three dimensions.

Topical Description

Week	Chapter		Comment
1	General Principles; Vectors	1, 2	
2			
3	Equilibrium: Particle	3	
4	Force Systems	4	
5			
6	Equilibrium : Rigid Body	5	
7			
8	Structural Analysis	6	
9	Internal Forces	7	
10	Friction	8	
11	Centroids & Center of Gravity	9	
12			
13	Moments of Inertia	10	

14			
15	Virtual Work	11	

Notes to Instructors

1. All instructors teaching this course will use the same textbook.

2. Course content within this course may be covered at the instructor's discretion but with all topics being covered.

3. This course and its grades will be structured around a minimum of 2 tests, final exam, and homework.

4. At the end of the semester, all instructors will give the outcome assessment as it relates to the final exam to the program head at the same time they prepare their student final grades.

5. A comprehensive final exam will be given, which must be at least 10% of the final grade.