**Course Outline for:** ENGR 2235 Statics

**A. Course Description:**

1. Number of credits: 3
2. Lecture hours per week: 3
3. Prerequisites: PHYS 1121 (C or higher) and MATH 1510 (C or higher); OR
   Eligible for MATH 1520
   MATH 1510 (C- or better, valid for 5 years); OR
   Placement Level of MATH 1520:
   AP Calculus AB test score of 3-5
   AP Calculus AB sub score of 3-5 with Calculus BC test score of 1-2
   AP Calculus BC test score of 3
4. Corequisites: None
5. MnTC Goals: None

This course covers free-body diagrams and the principles of statics. Applications to simple trusses, frames, and machines are covered. Distributed loads and internal loads in beams are introduced.

**B. Date last reviewed/updated:** October 2023

**C. Outline of Major Content Areas:**

1. Vectors.
2. Forces in a plane.
3. Forces in space.
4. Vector and scalar products.
5. Center of gravity for two-and three-dimensional bodies.
6. Structures: Trusses and frames.
7. Friction and moments of inertia.

**D. Course Learning Outcomes:**

Upon successful completion of the course, the student will be able to:

1. Construct free-body diagrams, and calculate the reactions necessary to ensure static equilibrium.
2. Analyze distributed loads.
3. Analyze internal forces and moments in beams.
4. Calculate centroids and moments of inertia.
5. Solve static equilibrium problems involving friction.

**E. Methods for Assessing Student Learning:**

Methods for assessment may include, but are not limited to, the following:

1. Exams
2. Problem sets

3. Group projects

**F. Special Information:**

Students must have a graphing calculator.