

**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)
4. Corequisites: None
5. MnTC Goals: None

An introduction to the principles of engineering statics focusing on the application of equilibrium principles to simple trusses, frames, and machines, as well as analysis of distributed loads and internal forces in beams. Static friction in square-threaded screws, bearings, and belts are also introduced. Students will gain practical insights into real-world engineering scenarios.

**B. Date last reviewed/updated:** January 2025**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. Communicate the equations of equilibrium for particles and rigid bodies, both in two and three dimensions.
2. Draw accurate free-body diagrams.
3. Calculate the reaction loads required for static equilibrium for particles and rigid bodies, both in two and three dimensions.
4. Calculate centroids for a wide variety of shapes.
5. Re-express distributed loads as equipollent point forces in free body diagrams and equations of motion.
6. Calculate internal loads in beams.
7. 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.