Title: TCCN:	**Engineering Mechanics: Statics** **ENGR 2301**
Course Description	Basic theory of engineering mechanics, using calculus, involving the description of forces, moments, and couples acting on stationary engineering structures; equilibrium in two and three dimensions; free-body diagrams; friction; centroids; centers of gravity; and moments of inertia. Prerequisite: PHYS 2325—University Physics I and PHYS 2125—University Physics I (Lab), or PHYS 2425—University Physics I (Lecture and Lab) Concurrent enrollment in or previous completion of MATH 2414—Calculus II
Course Outcomes	Upon successful completion of this course, students will: 1. State the fundamental principles used in the study of mechanics. 2. Define magnitude and directions of forces and moments and identify associated scalar and vector products. 3. Draw free body diagrams for two- and three-dimensional force systems. 4. Solve problems using the equations of static equilibrium. 5. Compute the moment of force about a specified point or line. 6. Replace a system of forces by an equivalent simplified system. 7. Analyze the forces and couples acting on a variety of objects. 8. Determine unknown forces and couples acting on objects in equilibrium. 9. Analyze simple trusses using the method of joints or the method of sections. 10. Determine the location of the centroid and the center of mass for a system of discrete particles and for objects of arbitrary shape. 11. Analyze structures with a distributed load. 12. Calculate moments of inertia for lines, areas, and volumes. 13. Apply the parallel axis theorem to compute moments of inertia for composite regions. 14. Solve problems involving equilibrium of rigid bodies subjected to a system of forces and moments that include friction. 15. Solve problems involving dry sliding friction, including problems with wedges and belts.