EGN 3311 STATICS
Course Syllabus

1. **Course number and name:** EGN 3311 Statics

2. **Credits and contact hours:** 3 credits / Three 50 minute lectures each week

3. **Instructor’s or course coordinator’s name:** Dr. C.T. Tsai


5. **Specific course information:**
   
   (a) **Brief description of the content of the course (catalog description):** This course deals with analysis of force and moment systems for static equilibrium of trusses, beams, frames, and machines; elements of frictions; centroid, center of gravity, center of mass, and moment of inertia.

   (b) **Prerequisites:** MAC 2282 Calculus for Engineers II, PHY 2043 Physics for Engineers I (both with a grade of C or above).

   (c) **indicate whether a required, elective, or selected elective course in the program:** Required

6. **Specific goals for the course:**

   (a) **Specific outcomes of instruction (course specific objective):** The objectives of the course are to provide introduction to static equilibrium conditions and vector algebra for determining forces and moments on particles and bodies; the determination of centers of mass and volume and moments of inertia; the application of basic mechanics principles for the analysis of static engineering structures.

   (b) **Explicitly indicate which of the student outcomes listed in Criterion 3 or any other outcomes are addressed by the course.** The learning outcomes of the course (and related ABET Criterion 3) outcomes are:

   1. An ability to manipulate vector operators and apply them to particles and rigid bodies. (a,e,k)
   2. An ability to draw free-body diagrams of particles and rigid bodies. (a,e,k)
   3. An ability to determine internal forces in structures and shear force and bending moment in beams. (a,e,k)
   4. An ability to calculate centroid and moment of inertia of complex shapes. (a,e,k)
   5. An ability to effectively communicate in writing a report. (g) (Optional)

7. **Brief list of topics to be covered:**
   - Fundamental concepts of mechanics, unit systems
   - Force vectors
   - Equilibrium of a particle
   - Force system resultants
   - Equilibrium of a rigid body
   - Structural analysis of trusses
   - Internal forces of structural members
   - Center of gravity and centroid
   - Moment of inertia