



GE 201 – Statics

Code and Name: GE 201 – Statics

Credit Hours: 3 (Lecture: 3, Tutorial: 1)

Textbook:

- Engineering Mechanics - Statics: Hibbeler, R.C., 12th Edition, Pearson, 2010

Other References:

- Pytel, A., Kiusalaas, J., *Engineering Mechanics - Statics, 3rd Edition, Cengage Learning. 2010*

- Meriam, J. L, *Engineering Mechanics – Statics, 5th Edition, John Wiley. 2002*

Course Description:

Vector analysis, forces, moments, and couples, resultants of force systems. Equilibrium analysis and Free-Body Diagrams. Analysis of forces acting on members of Trusses and Frames. Shear-Force and Bending-Moment distributions. Centroids, Center of mass, hydrostatic pressure. Moment of Inertia, Parallel axis theorem, Polar Moment of Inertia and Product of Inertia.

Pre-requisites: MATH106 Calculus II, PHYS118 Physics II, PHYS120 Physics II Lab.

Co-requisites: None

Course Learning Outcomes:

With relation to ABET Student Outcomes (From Fall 2019-SOs: 1-7)

1. Recognize the importance of knowledge of math and physical sciences to solve engineering problems (1)
2. Understand the principles of engineering mechanics and statics (1)
3. Explain position, forces, and moments in terms of scalar and vector forms in two and three dimensions (1)
4. Determine components and resultant of a force system as well as simplify systems of forces and moments to equivalent systems (1)
5. Apply the concepts of equilibrium to evaluate support reactions and internal forces (1)
6. Draw free-body, shear-force and bending-moment diagrams (1)
7. Evaluate geometrical properties of plane area needed for engineering analysis and design (1)
8. Appraise the importance of computational tools in engineering analysis (1)

Topics to be covered:

- General Principles: Newton's Laws, SI system of units.
- Force Vectors: Addition of forces, vector's magnitude and direction, dot product.
- Equilibrium of a Particle: Free Body Diagram.
- Force System Resultants: Moment of a force, moment of a couple, and reduction of distributed loading to a resultant force.
- Equilibrium of a Rigid Body: Equations of equilibrium.
- Structural Analysis: Forces in the members of a truss.
- Internal Forces: Internal loadings in a member, shear and moment diagrams.
- Center of Gravity and Centroid: Concept of center of gravity, location of center of gravity of composite bodies.
- Moments of Inertia: Moment of inertia for an area and for composite areas, polar moment of inertia and product of inertia.

Grading Policy:

The grading for the course are 60% coursework and 40% Final Exam. The course work consists of two Midterm Exams, where each midterm exam is worth 20%.

It also includes quizzes for the remaining 20%.

