Course Title	Course Code	Credit Hours
Engineering Mechanics-I: Statics	AE-130	3-0

Textbook:

- R. C. Hibbeler, "Engineering Mechanics Statics and Dynamics", Pearson

Reference Books/Materials:

- Stephen Timoshenko, Donovan Harold Young, "Engineering Mechanics", McGraw Hill Publishers
- Ferdinand P. Beer, and E. Russell Johnston, "Vector Mechanics for Engineers: Statics & Dynamics", McGraw-Hill Education

Course Objectives:

The course aims to develop in the students the capacity to predict the effects of forces and moments while carrying out the creative design.

Course Outline:

- Introduction and Basic Concepts of Newton's Laws of Motion, Gravity, and Units
- 2-D Force System:
    - Force
    - Moment
    - Couple
    - Resultants
- Equilibrium in Two Dimensions and Equilibrium of Particle
- Equilibrium of Rigid Body System
- Isolation and Free Body Diagram
- Equilibrium Conditions
- Equilibrium in Three Dimensions
- Plane Trusses:
    - Method of Joints
    - Method of Sections
    - Frames and Machines
- Internal and External Forces in Beams
- Shear Force and Bending Moment Diagram of Loaded Beam
- Centroids and Moment of Inertia:

- o Centers of Gravity and Mass
  - o Centroid for a Body
  - o Moment of Inertia for Areas
  - o Parallel Axis Theorem
  - o Radius of Gyration
- Friction: Characteristic of Dry Friction