ES102 Statics
Course Objectives

Contents	Objectives
General Principles	Students will be able to understand basic principles of mechanics, idealization, and know how to do unit conversion.
Force Vectors	Students will know how to add and resolve forces in planar and 3D space. Students will be able to calculate force vectors either in terms of Cartesian components or magnitude/direction.
Force System Resultants	Concepts of moment and couple will be introduced. Students will be able to calculate moment about an axis in 2D and 3D and to reduce a simple distributed loading to a resultant force having a specified location.
Equilibrium of a Particle and Rigid Body	Students will be able to know how to draw a free-body diagram of a rigid body and develop the equations of equilibrium.
Structural Analysis	Students will be able to apply equilibrium concept/techniques to solve simple 2D structural problems. Method of joint and method of section will be introduced for truss structures.
Internal Forces	Students will know how to extend the method of section for determining the internal loadings in a member of structure. Shear-moment diagrams for a beam will be introduced.
Friction	Students will be able to understand the concept of friction and know how to analyze friction forces.
Centroid and Moments of Inertia	Students will be able to understand the concept of centroid and determine its location for a discrete system and a continuous body of arbitrary shape in 2D. Students will know how to calculate a moment of inertia for a simple area.