H-Form ISE 205

Course Information:	
Code and Title:	ISE 205 Solid Mechanics
Prerequisites:	PHYS 102 + MATH 103T
Co requisite (if any)	-
Credit Hours: 3	Lecture Hrs. (45), Tutorial Hrs. (15), Lab (0), **Total Credits** (60)
College/ Department:	College of Engineering/Industrial and Systems Engineering

Course Description:
The Solid Mechanics course offers a comprehensive study of fundamental principles governing materials and structures. It covers vector forces, equilibrium of particles, and force system resultants, progressing to the analysis of equilibrium in rigid bodies and the study of internal forces, friction, centroids, and moments of inertia. The dynamics of particles, including kinematics and kinetics, are explored, extending to rigid bodies in plane motion. The course concludes with an examination of work and energy in rigid bodies, along with an exploration of impulse and momentum in particles. Overall, the course provides a robust foundation for understanding structural mechanics and prepares students for advanced studies in related fields.

Course Objectives:
The course introduces general principles in mechanics, concept of the free-body diagram for a particle. Solve particle equilibrium problems using the equations of equilibrium. Determine forces in the members of a truss using the method of joints and the method of sections. Present of frictional force analysis on wedges, flat belts. Determine the center of gravity and centroid for a body and composite parts. Determine the moment of inertia for an area. Concepts of position, displacement, velocity, and acceleration. Study particle motion. State Newton's Second Law of Motion. Develop the principle of work and energy. Study problems that involve power and efficiency. Develop the principle of linear impulse and momentum for a particle.

Course Learning Outcomes		
		PLO
Knowledge Understanding		
1.1	Understand concepts related to Statics, Kinematics, Kinetics for mechanical systems and applications	K1
1.2	Identify the roles of rigid bodies for modelling and calculations.	K2
Skills		
2.1	Analyse mechanical systems at rest and motion	S1
2.2	Solve problems for bodies' equilibrium, friction, and moments of inertia.	S3
2.3	Calculate mechanical system required quantities at various time during motion.	S3

Textbook:			
Title:	Engineering Mechanics: Statics & Dynamics,		
Author(s):	-		
Publisher:	Hibbler, Pearson	**Year and Edition:**	14th edition, 2022
Other Useful Resources:	Engineering Mechanics: Statics; 12th Edition, J.L. Meriam, L.G. Kraige, Prentice Hall, 2012. قسم الهندسة		