

1. Course number and name: **MEEN 2301 – Mechanics I (Statics)**
2. Credits and contact hours: **3 credits**
3. Instructor's or course coordinator's name: **Dr. Xiaohua Li**
4. Text book, title, author, and year:

**Engineering Mechanics: Statics, 14th Edition, Pearson, 2016, R.C. Hibbeler**

5. Specific course information
  - a. brief description of the content of the course (catalog description): **The course emphasizes the proper utilization of vector algebra and free-body diagrams to solve problems in the first course of the engineering mechanics sequence. The course begins with basic theory of engineering mechanics, using calculus, involving the motion of particles, rigid bodies, and systems of particles. The course covers six major areas of study: (1) vector algebra of forces and moments; (2) free-body diagrams and equilibrium of particles and rigid bodies, (3) structural analysis of internal and external forces of trusses, frames, and machines; (4) principles and application of friction; (5) centroids and centers of gravity; and (6) moments of inertia.**
  - b. prerequisites or co-requisites: **Prerequisite(s): MEEN 1000, PYHS 1710/1730.**
  - c. indicate whether a required, elective, or selected elective (as per Table 5-1) course in the program: **Required**
6. Specific goals for the course:

MEEN 2301 Course Learning Outcomes	ABET EAC Student Outcomes						
	1	2	3	4	5	6	7
State the fundamental principles used in the study of mechanics	X						
Define magnitude and directions of forces and moments and identify associated scalar and vector products	X						
Draw free body diagrams for two- and three-dimensional force systems	X						
Solve problems using the equations of static equilibrium	X						
Compute the moment of force about a specified point or line	X						
Replace a system of forces by an equivalent simplified system	X						
Analyze the forces and couples acting on a variety of objects	X						
Determine unknown forces and couples acting on objects in equilibrium	X						
Analyze simple trusses using the method of joints or the method of sections	X						
Determine the location of the centroid and the center of mass for a system of discrete particles and for objects of arbitrary shape	X						
Analyze structures with a distributed load	X						
Calculate moments of inertia for lines, area, and volumes	X						
Apply the parallel axis theorem to compute moments of inertia for composite regions	X						
Solve problems involving equilibrium of rigid bodies subjected to a system for forces and moments that include friction	X						
Solve problems involving dry sliding friction, including problems with wedges and belts	X						

7. Brief list of topics to be covered:

Topics to Be Covered	
Equilibrium of a Particle	Force System Resultants
Equilibrium of Rigid Body	Structural Analysis
Internal Forces	Friction
Center of Gravity/Centroid	Moments of Inertia