

School of Management, Engineering and Technology
Department of Electrical Engineering and Renewable Energy
ENGR 211: Statics

Catalogue Description (2009/2010):	Fundamental principles of mechanics of rigid bodies and the application of these principles to engineering problems.		
Hours/Credits: (Lecture-Lab-Total)	(4-0-4)		
Class Schedule:	Offered summer and fall; twice weekly, for 1:50 minutes lecture sessions each.		
Prerequisites:	Pre- or corequisite: MATH 252; Prerequisite: PHY 201 or PHY 221.		
Required Text:	Engineering Mechanics: Statics and Student Study Pack with FBD Package, 11 th edition , by Hibbeler, R.C.		
Reference Text:	None		
Course Coordinator:	Tom White		
Regular Instructors:	Joseph Mohr, Tom White		
Course Objective:	<p>Upon completion of the course, a student should be able to:</p> <ul style="list-style-type: none"> ▪ Analyze forces using vectors in two and three dimensions. ▪ Draw complete and correct free body diagrams of particles and rigid bodies. ▪ Apply equilibrium conditions to particles and rigid bodies. ▪ Determine the resultant of a system of forces and moments. ▪ Write appropriate equilibrium equations. ▪ Analyze rigid bodies for moments, couples, and forces in systems. ▪ Analyze structures-trusses, frames and machines. ▪ Analyze beams loaded with a system of forces. ▪ Analyze systems that include frictional forces. ▪ Determine centroids of lines, areas, and volumes. ▪ Determine center of gravity, center of mass. ▪ Calculate moments and product of inertia. 		
Topics Covered:	<ul style="list-style-type: none"> ▪ Intro, units, vectors. ▪ Position vectors; force vectors. ▪ Particle equilibrium; 3D equilibrium systems and free-body diagrams. ▪ Moments of force; cross product. ▪ Couples, equivalent forces and moments; resultants and reduction of forces, moments; distributed loads. ▪ Rigid body equilibrium. ▪ 2D and 3D force members; constraints for rigid bodies. ▪ Trusses; methods of section/joints; zero force members. ▪ Frames and machines. Internal forces, shear and moment relationships. ▪ Dry friction and wedges. ▪ Friction on screws, belts, bearings. ▪ Center of gravity and composite bodies. ▪ Moments of inertia; topics review for exam. 		
Relevant Program Outcomes:	<p>(a) an ability to apply knowledge of mathematics, science, and engineering (e) an ability to identify, formulate, and solve engineering problems (g) an ability to communicate effectively (k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice</p>		
Required or Elective:	Required		
Criterion 5:	Engineering Topics		
Prepared By:	Thomas White	Updated:	5-4-10