

MEGR 2141 Engineering Mechanics I: Statics

Catalog Data	MEGR 2141. Engineering Mechanics I. This course introduces the principles of particle and rigid body mechanics with engineering applications; force and moment systems and resultants, equilibrium of particles and rigid bodies, friction, properties of areas and volumes. (Fall, Spring)
Textbooks	Meriam and Kraige, Engineering Mechanics – Statics, 6 th Edition, John Wiley & Sons, 2007.
Goals	The objective of this course is to provide students with the tools for analyzing systems in static equilibrium.
Prerequisites	Phys 2101 and Math 1242
Class Topics	Review of basic physics Force, moment and position vectors Equivalent force-couple systems Static equilibrium Loads in truss systems Loads in frames/machines Centroids of areas and distributed forces Shear and moment diagrams Friction Second moments of area (area moments of inertia)
Outcomes	At the completion of the course the student should be able to: <ol style="list-style-type: none">1. Represent and calculate force and moment vectors and their resultants.2. Draw free-body diagrams for static systems.3. Solve for loads in truss systems using method of joints and method of sections.4. Solve for loads in frame/machine systems.5. Draw the shear and moment diagrams of beams with concentrated forces, distributed forces and couples.6. Analyze loads in static systems involving friction.7. Calculate the first and second moments of area (centroid and area moment of inertia) by integration or method of composites with utilization of the transfer of axis theorem.
Computer Usage	Students will be introduced to the use of a mathematical software package for the solution of loads in static systems.
Laboratory	None
Design Content	None
Grading	Grading policies are determined by the instructor

Follow-up Courses	This course is a prerequisite for MEGR 2144, MEGR 2156, MEGR 2180, MEGR 2240, and MEGR 3121.
Notes	<ol style="list-style-type: none">1. Assignment and test schedules will be provided to the students on the first day of class2. Students have the responsibility to know and observe the requirements of the UNCC Code of Student Academic Integrity (http://www.legal.uncc.edu/policies/ps-105.html)
Program Outcomes	This course contributes to the fulfillment of program outcomes ME1 and ME 5 (ABET criteria a and e). Student attainment of outcome ME5 is assessed in this course.
Coordinator	Kevin Lawton, Senior Lecturer of Mechanical Engineering and Engineering Science
Prepared by	Kevin Lawton, September 9, 2008; revised November 7, 2009