

CEE 30 STATICS

(Required for AE, CE, EnE, ME, and MSE)

Catalog Data:	CEE 30: Statics (Credit Units 4) Addition and resolution of forces, distributed forces, equivalent system of forces centroids, first moments, moments and products on inertia, equilibrium of rigid bodies, trusses, beams, cables. Corequisite or prerequisite: Mathematics 2D. Prerequisite: Physics 7A. Same as ENGR30 and MAE30. (Design Units: 0)
Textbook:	F.P. Beer, E.R. Johnston and E.R. Eisenberg, <i>Vector Mechanics for Engineers Statics</i> , 8th edition, McGraw-Hill, 2007.
References:	
Coordinator:	Lizhi Sun
Course Objectives:	This course is designed to develop skills in treating the static analysis of rigid bodies.
Course Outcomes:	Students will: Analyze and draw free body diagrams for single particles and rigid body systems. Establish equilibrium equations of particles/rigid bodies for solve for forces and support reactions. Calculate centroids of areas and moments of inertia. Apply the theory and methods to analyze simple trusses. Compute internal forces in cables/beams. Formulate statics problems for simple structural beams.
Prerequisites By Topic:	Newtonian mechanics, kinematics, and dynamics of motion. Differential and integral calculus of real-valued functions of several real variables, including applications.
Lecture Topics:	Introduction. Fundamental concepts, units, vector and scalar quantities. Statics of a particle. Equilibrium of forces in a plan and in space. Statics of rigid bodies. Moments and couples, equivalence of force systems. Equilibrium of rigid bodies in two and three dimensions. Centroids of areas. Pin-jointed trusses. Analysis by methods of joints and sections. Loaded cables. Internal forces in beams. Moments of inertia, products of inertia.
Class Schedule:	Meets for 3 hours of lecture and 1 hour of discussion each week for 10 weeks.
Computer Usage:	Basic computer skills
Laboratory Projects:	
Professional Component:	Contributes to Engineering Topics Courses of Civil Engineering and Environmental Engineering majors.
Relationship to Program Outcomes:	CE - The course relates to Program Outcomes a and e as stated at: http://undergraduate.eng.uci.edu/degreeprograms/civil/mission

EnE - The course relates to Program Outcomes a and e as stated at:
<http://undergraduate.eng.uci.edu/degreeprograms/environmental/mission>

Design Content Description

Approach:

Lectures: %

Laboratory Portion: %

Grading Criteria:

Homework:	20%
Midterm Exams (2):	40%
Final Exam:	<u>40%</u>
	100%

Estimated ABET Category Content:

Mathematics and Basic Science: ___ credit units or ___%

Engineering Science: 4 credit units or 100 %

Engineering Design: 0 credit units or 0 %

Prepared by: Lizhi Sun **Date:** July 2007

CEP approved: Summer 2001