Statics
Spring 2013
Engineering 8
Section #56056

Instructor: Dr. John Heathcote
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Class Format: ONLINE, with on-campus tests

Office Hours:
Monday 11:00 am -11:50 am
Wednesday 11:00 am -11:50 pm
Thursday 11:00 am -11:50 pm
Or, feel free to make an appointment.

Prerequisite: PHYS 4A
Corequisite: MATH 6

Catalog Description: The study of rigid bodies in static equilibrium when acted upon by forces and couples in two- and three-dimensional space. Includes equilibrium of rigid bodies, trusses, frames and machines, as well as the calculation of centers of mass, centroids, friction, moments of inertia, and shear and bending moment diagrams.

Optional Textbook: Engineering Mechanics: Statics, R.C. Hibbeler, 13th Edition, Pearson
(An old edition of this textbook would still be useful for reading the material and seeing the examples.)

Required Online Site: MasteringEngineering site for Engineering Mechanics: Statics, 13th edition

Online cost is $110 (with etext) or $60.50 (without etext)

Register at: http://www.masteringengineering.com/site/login.html
Course ID: heathcote47018

Grading:	80%	Four Tests
	20%	Homework

Tests and Final Exam: There will be four tests during the term. Each test may cover material from the entire semester. Rules for what is allowed for each test will be announced before each test. Students will take these exams on the Reedley College campus. The dates for these exams are **2/7, 3/7, 4/11, and 5/16 at 7pm**. (Locations will be announced.)

Alternate Test Arrangements: Contact the instructor as soon as possible if alternate test times are necessary.

Homework: Homework will be assigned in order to practice the problem-solving skills taught in class. These will be accessed and submitted on the MasteringEngineering website.

How does this online course work? This course will be managed through the "MasteringEngineering" website. Each week, there will be two deadlines (typically, Tuesdays and Fridays). For each deadline, I will post a folder which will include study materials such as notes, links to recorded lectures, and practice problems. Most deadlines will involve an online homework assignment.

Grading Scale:

90-100%	A
80-89.9%	B
70-79.9%	C
60-69.9%	D
<60%	F

Accommodations for Students with Disabilities:
If you have a verified need for an academic accommodation or materials in alternate media (i.e., Braille, large print, electronic text, etc.) per the Americans with Disabilities Act (ADA) or Section 504 of the Rehabilitation Act, please contact me as soon as possible.

Add Date:	Friday, January 25th	Last day to add a course
Drop Date:	Friday, March 8th	Last day to drop this course
Holidays:	Monday, January 21st	Martin Luther King Jr. Day
	Friday-Monday, Feb. 15-18th	Presidents' Day Holidays
	Monday-Friday, March 25th-29th	Spring Recess Holidays
Final:	Thursday, May 16th 7:00 pm	

Course Outline:

Unit	Chapters	Topics	Weeks
A	1-3	Introduction, Force Vectors, Equilibrium at a Point	1-4
B	4, 5	Force Systems, 2-D Rigid Body Equilibrium	5-8
C	5, 6	Equilbrium in 3-D, Structures	9-12
D	7-10	Internal Forces, Friction, Centroid, Moments of Inertia	13-18

COURSE OUTCOMES:

Upon completion of this course, students will be able to:

A. Solve mechanical equilibrium problems involving the equilibrium of particles and rigid bodies using both graphical and vector calculus techniques.
B. Solve mechanical equilibrium application problems for trusses, frames, and machines.
C. Calculate shear, normal forces, and bending moment for loaded beam problems and produce shear and bending moment diagrams.
D. Solve friction application problems.
E. Determine centroid, center of mass, and center of gravity for various objects and geometric shapes.
F. Determine moment of inertia and mass moment of inertia for various objects and geometric shapes.

COURSE OBJECTIVES:

In the process of completing this course, students will:

A. Perform the vector operations of addition, subtraction, dot product, and cross product and use them in applications.
B. Draw the free body diagram of an object subjected to external forces and couples.
C. Apply the principles of mechanical equilibrium to solve problems involving a force system acting on a point mass.
D. Define and use the concepts of moment, couple, and resultant as they apply to static equilibrium problems.
E. Apply the principles of mechanical equilibrium to solve problems involving forces and couples acting on a theoretical rigid body.
F. Learn the analytical techniques appropriate for objects subjected to distributed forces.
G. Solve truss, frame, and machine application problems, using the principles of mechanical equilibrium.
H. Define and use the concepts of shear force, normal force, and bending moment in the solution of internal force problems.
I. Generate shear and bending moment equations and draw shear and bending moment diagrams for a loaded beam.
J. Solve different classes of dry friction problems.
K. Apply the theory of dry friction to application problems.
L. Define and calculate centroid, center of mass, and center of gravity for various 1-D, 2-D, 3-D, and composite bodies.
M. Define and calculate moment of inertia and mass moment of inertia for various 1-D, 2-D, 3-D, and composite bodies