EM 306 – Statics
Summer 2004

Required or Elective: Required

2003-2004 Catalog Data:
Vector algebra, force systems, free-body diagrams; engineering applications of equilibrium, including frames, friction, distributed loads; centroids, moments of inertia.

Prerequisite(s): Credit or registration for Mathematics 408D or 308L, and credit or registration for Physics 303K and 103M. May not be counted by students with credit for Engineering Mechanics 306S.

Textbook(s):
Bedford, A., and Fowler, W., *Engineering Mechanics Statics*, 4th Edition, Prentice-Hall, 2005.

Other Required Material: None

Course Objectives:
To teach students the principles of analyzing particles and rigid bodies in equilibrium.

Topics Covered (approximate number of classes per topic):

1. Vectors (6 classes)
2. Forces (3 classes)
3. Moments (3 classes)
4. Objects in Equilibrium (6 classes)
5. Structures in Equilibrium (7 classes)
6 Center of Mass, Moment of Inertia (3 classes)
7. Friction (4 classes)
8. Beams and Cables (5 lectures)

Class/Laboratory Schedule (Type, number and duration of sessions each week)

Class:	5 per week;	75 minutes each
Recitation:	1 per week;	120 minutes

Design Assignments:
There are no explicit design projects. However, there are occasional in-class presentations of problems with design content.

Laboratory Projects: None

Contribution of Course to Meeting the Professional Component:

	SCH	
Math and Science	.5	
Engineering Topics	2.5	(Including: ______ SCH of Engineering Design)
General Education		

Relationship of the Course to Aerospace Engineering Program Outcomes:

ABET a - k		ASE Program Outcomes
a	√	1. The ability to apply knowledge of mathematics, physics, chemistry and engineering science to solve engineering problems.
e, k	√	2. The ability to identify, formulate, and solve problems in aerospace structures, air-breathing and rocket propulsion, flight dynamics, and flight control systems using modern engineering techniques and tools.
c, k	√	3. The ability to analyze and perform preliminary design of components of aerospace structures, air-breathing and rocket propulsion systems, and flight control systems using modern engineering techniques and tools.
d		4. The ability to work on a multi-disciplinary team to perform conceptual design of aircraft or spacecraft that will meet a set of mission requirements.
b		5. The ability to design and conduct experiments and analyze and interpret data.
g		6. The ability to communicate effectively in oral, written, and graphical form.
f		7. The ability to recognize the impact of engineering systems on the environment and society and an understanding of professional and ethical responsibility.
i		8. Recognition of need and the ability to engage in lifelong learning.

ABET EC2000 Program Criteria for Aerospace Engineering Achieved:

AEROSPACE ENGINEERING PROGRAM CRITERIA

√	Programs must demonstrate that graduates have knowledge of:
	a. Aerodynamics
	b. Aerospace materials
√	c. Structures
	d. Propulsion
	e. Flight Mechanics
	f. Stability and Control
	g. Orbital Mechanics
	h. Space Environment
	i. Attitude Determination and Control
	j. Telecommunications
	k. SpaceStructures
	l. Rocket Propulsion
	m. Preliminary/Conceptual Design
	n. Other Design Content
	o. Professionalism
	p. Computer Usage

Prepared by: Wallace Fowler Date: April 21, 2004