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):

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:

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<tbody>
<tr>
<td>Math and Science</td>
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<tr>
<td>Engineering Topics</td>
<td>2.5 (Including: ______ SCH of Engineering Design)</td>
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<td>General Education</td>
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Relationship of the Course to Aerospace Engineering Program Outcomes:

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<th>ABE Task</th>
<th>ASE Program Outcomes</th>
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<tbody>
<tr>
<td>a</td>
<td>1. The ability to apply knowledge of mathematics, physics, chemistry and engineering science to solve engineering problems.</td>
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<tr>
<td>e, k</td>
<td>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.</td>
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<td>c, k</td>
<td>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.</td>
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<td>d</td>
<td>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.</td>
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<td>5. The ability to design and conduct experiments and analyze and interpret data.</td>
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<td>6. The ability to communicate effectively in oral, written, and graphical form.</td>
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<td>f</td>
<td>7. The ability to recognize the impact of engineering systems on the environment and society and an understanding of professional and ethical responsibility.</td>
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<td>i</td>
<td>8. Recognition of need and the ability to engage in lifelong learning.</td>
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</table>

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. Communications
  - k. Space Structures
  - l. Rocket Propulsion
  - m. Preliminary/Conceptual Design
  - n. Other Design Content
  - o. Professionalism
  - p. Computer Usage

Prepared by: Wallace Fowler Date: April 21, 2004