

Tennessee Technological University
Department of Civil & Environmental Engineering
CEE 2110 Engineering Mechanics – Statics
Required
Fall Semester 2007, Spring Semester 2008

2007 Catalog Data:	CEE 2110. Engineering Mechanics – Statics. Lecture 3. Credit 3. Vector algebra, resultants, equilibrium, friction, centroids, inertia, trusses, machines and frames, beam shear and moments. Prerequisites: ENGR 1120, Math 1920. Corequisite: PHYS 2110.
Textbook:	Hibbeler, R.C., <i>Engineering Mechanics – Statics 11th Ed.</i> , Prentice Hall Publishing Co., 2007.
Reference:	None
Coordinator:	R. C. Henderson, Associate Professor of Civil Engineering
Goal:	The goal of CEE 2110 “Engineering Mechanics” is to introduce the student to the basic principles and applications of rigid bodies in static equilibrium.

Course learning objectives:

1. The student is to understand and become conversant in engineering mechanics terminology.
2. The student is to apply fundamental principles of mathematics and engineering mechanics to analyze and correctly solve problems involving objects in static equilibrium.

Course measurable outcomes:

Students will be expected to:

1. perform vector mathematics and apply this knowledge to problems involving forces on objects;
2. describe mathematically “real world” objects using free body diagrams;
3. apply the equations of equilibrium to objects (i.e., summation of forces and moments);
4. model determinate objects as a system of applied forces and support reactions and use the equations of equilibrium to determine the unknown reactions;
5. determine the location of the centroid of an object;
6. determine the moment of inertia of an object about various axes;
7. determine the axial forces in determinate trusses;
8. determine shear force and bending moment at various locations along the length of beams resisting transverse loads; and
9. determine the friction forces on objects and demonstrate whether an object subjected to applied and frictional forces is in equilibrium.

Topics covered: (Three lecture classes per week, 55 minutes each)

1. Vector Algebra (7classes)
2. Equilibrium and free body diagrams (3 classes)
3. Moments and Couples (6 classes)
4. Equivalent force systems (3 classes)
5. Trusses (5 classes)
6. Frames and machines (2 classes)
7. Centroids (3 classes)
8. Shear and moment in beams (5 classes)
9. Friction (2 classes)
10. Moment of inertia (3 classes)
11. Tests (3 classes)

Contribution of the course to meeting professional component:

This course is a part of the engineering topics of the curriculum.

ABET category content (as estimated by faculty member who prepared this course description):

Engineering Science: 3 credits or 100%
Engineering Design: 0 credits or 0%

Relation of course to program outcomes:

- Outcome 1: The graduates will have a broad understanding of relevant principles of mathematics, science, and engineering.
Outcome 2: The graduates will have a general comprehension of four technical areas appropriate to civil engineering.
Outcome 4: The graduates will be capable of design activities and have the ability to identify, formulate, and solve engineering problems.
Outcome 8: The graduates will have the ability to use techniques, skills, and modern engineering tools needed for engineering practice.

Relation of course to ABET Criteria:

General Criteria

Bloom's Level of Achievement

- | | |
|--|---|
| (3a) Knowledge of math, science, engineering | 3 |
| (3e) Identify, formulate, and solve engineering problems | 3 |
| (3k) Techniques, skills, modern tools for engineering practice | 3 |

Program Criteria

Bloom's Level of Achievement

- | | |
|---|---|
| 1. Apply knowledge of math and sciences | 3 |
| 2. Apply knowledge of four technical areas appropriate to civil engineering | 3 |

Computer usage: None

Laboratory projects: None

Prepared by: R.C. Henderson

Date: September 2007