

CEE 2110 Engineering Mechanics - Statics
Required Course

Catalog Description:

Lec. 3. Credit 3.

Prerequisite: MATH 1920 and PHYS 2110 (PHYS 2110 may be taken concurrently). Vector algebra, resultants, equilibrium, friction, centroids, moment of inertia, trusses, machines and frames, beam shear and moments.

Math & Basic Sciences: 0 credits
Engineering Topics: 3 credits Contains significant design
General Education: 0 credits
Other: 0 credits
Course Coordinator: Craig Henderson
Updated: 09/17/2013

Text Book(s) and Supplemental Material(s):

Hibbeler, R.C., *Engineering Mechanics – Statics (latest edition)*, Prentice Hall Publishing Co.

Course Goal(s):

To introduce the student to the basic principles and applications of rigid bodies in static equilibrium.

Instructional Outcomes for the Course:

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.

Criterion 3 Student Outcomes addressed by this Course:

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

Program Criteria addressed by this Course:

- Apply knowledge of math and sciences (Level 3)
- Apply knowledge of technical areas appropriate to civil engineering (Level 3)

Course Topics:

1. Vector Algebra (17%)
2. Equilibrium and free body diagrams (10 %)
3. Moments and Couples (15 %)
4. Equivalent force systems (8 %)
5. Trusses (12 %)
6. Frames and machines (5 %)
7. Centroids (8 %)
8. Shear and moment in beams (12 %)
9. Friction (5 %)
10. Moment of inertia (8 %)

Additional Topics/Assignments for dual-level (4000/5000) courses:

N/A