CE 243 STATICS
Reuired Course (for ME)
Fall 2008

Instructor: Name: Sami And Kılıç
e-mail: skilic@boun.edu.tr
Course Data: Hours: T 6, Th 5-6, F 5 (P.S.)
Room: M 3120, M 3100, M 2230

Course Description (Catalog):
CE243 Statics (4+1+0) 4
Concept of modeling and basic principles; Rigid bodies: Equivalent systems of forces; Equilibrium of rigid bodies, analysis of planar rigid body systems; Distributed forces; Normal and shear forces and moment diagrams; Virtual work principle.

Prerequisite: Phys 101.
Course Objectives (Learning Outcomes):
To introduce freshman students to modeling techniques commonly used in engineering problems; to teach them how to turn real-life engineering systems into analytical models.
To provide students the ability for solving problems in a systematic manner by means of sketching the free-body diagrams for structures and components, and by applying the static equations of equilibrium in order to solve such engineering systems.
To teach students how structures support loads, how to draw the shear and moment diagrams for beams, and how to analyze cables and frames.
Textbook:
R. C. Hibbeler, "Principles of Statics", Pearson-Prentice Hall, 10th Ed, metric version, 2006, 432 pp.
Reference Books:
Beer, F.; Johnston, R., "Vector Mechanics for Engineers: Statics", McGraw-Hill, 7th Ed., 2003, 640 pp.
Curricular Context
The course is aimed towards providing engineering sophomore students the fundamentals of statics within the field of engineering mechanics and to provide an essential basis for engineering analysis and applications. The scope is limited to rigid body statics.
Laboratory and Computer Usage:
The lab sessions scheduled for this course are problem-solving sessions; not experimental labs, and will be run by the teaching assistants. Students are provided with worked out examples in electronic format before the problem sessions.
Class Policies:
Midterm exams: Two exams, each 25% of the course grade.
Final exam: at the end of the semester, 40% of the course grade.
Other: 10% weight on attendance and quizzes.
Contribution of the Course to Program Outcomes:
(a) An ability to apply knowledge of mathematics, science and engineering.
(c) An ability to design a system, component, or process to meet desired needs.
(e) An ability to identify, formulate and solve engineering problems.
(k) An ability to use the techniques, skills and modern engineering tools necessary for engineering practice.
Course Assessment:
Course will be assessed on the basis of the accomplishments regarding the course objectives and the contributions to the program outcomes. The evaluation will consist mainly of the responses from the students, who will provide their comments to various course related questions in the final week of the semester.

Week	Topics	Reading Assignments	Suggested Problems	Objectives
1	Introduction	Chapter 1	Provided at the Problem Sessions.	Present course outline, explain how various structures function in terms of supporting loads.
2-3	General principles, vectors used in mechanics, equilibrium of a particle, equivalent resultant force of a system of forces, and equilibrium of rigid bodies in two and three dimensions.	Chapter 2-4	Provided at the Problem Sessions.	Introduce problem solving techniques by applying the static equilibrium equations.
4	Structural analysis of trusses, frames, and machines.	Chapter 6	Provided at the Problem Sessions.	Illustrate the different ways of structural function for various systems; explain how to construct analytical models to analyze such structural systems and the assumptions used.
5-6	Internal loadings, shear and bending moment diagrams. Cables and suspension cables.	Chapter 7	Provided at the Problem Sessions.	Teach how to sketch the shear and bending moment diagrams that are essential in the analysis and design of beams.
7	Friction.	Chapter 8	Provided at the Problem Sessions.	Illustrate the use of friction in various engineering systems and the methods used for analysis.
8-9	Geometric properties of solids and distributed loadings; center of gravity and centroid.	Chapter 9	Provided at the Problem Sessions.	Teach how to find the centroids of different geometric shapes, the center of gravity for complex structures.
10-11	Moments of inertia.	Chapter 10	Provided at the Problem Sessions.	Develop techniques used for computing the cross-sectional properties such moments of inertia that are essential in solving beam problems.
12	Virtual works analysis and its applications in structural mechanics	Chapter 11	Provided at the Problem Sessions.	Illustrate the use of energy methods in solving complex structural systems.