

CIVE210 – STATICS

(Spring 2011-12)

Course Summary:

CIVE210 – Statics- 3 Credits – Undergraduate (Sections 1 & 2)

The course seeks to impart an understanding of the principles of static equilibrium and introduction to structural analysis to serve as a basis for the design of engineering systems.

Description:

Vector mechanics of forces and moments; free-body diagrams; equilibrium of particles and rigid bodies in two and three dimensions; plane and space trusses; frames and machines; axial, shear, and moment diagrams of beams and simple frames; friction; center of gravity and centroid; area moment of inertia; computer applications.

Topic Prerequisite:

Trigonometry and elementary calculus.

Textbook:Hibbeler, *Engineering Mechanics: Statics*, Pearson, 12th Edition.**Reference Books:**

Many books in library.

Moodle:

Course material will be available on Moodle via AUB website.

Instructors:

Amer Elsouiri (Section 1, Office 115, Bechtel; ame58@aub.edu.lb)

Mounir Mabsout (Section 2, Office 325, Bechtel; mounir@aub.edu.lb)

Graduate/Undergraduate Assistants: Anthony Aoun (aga28@aub.edu.lb), Joan Arwadi (jfa14@aub.edu.lb), Zeina Wafa (zww00@aub.edu.lb)

Class Hours:

Section 1: Lectures MW 9:00-10:00 (Qatami ELH)
Problem Session M 16:00–17:30 (Wing D)
Section 2: Lectures MW 10:00–11:00 (Room 545)
Problem Session W 16:00–17:30 (Wing D)

Office Hours:

MW: 11:00-12:00 (Elsouiri)

MW: 12:00-13:00 (Mabsout)

You can see either instructor for help in office hours.

Objectives:

This course is designed to be an introduction to engineering mechanics for static systems. The main objectives of the course are to (1) provide the student with tools for manipulating forces and moments using vector analysis in two and three-dimensional problems; (2) develop in the engineering student the ability to analyze any static problem in a simple and logical manner; (3) make the student understand the physical principles required for static equilibrium; and (4) enable the student to calculate forces, shears, and bending moments in members such as cables, trusses, beams, and frames.

Topics:

1. Introduction to Statics; Fundamental Concepts; Units
2. Vector Algebra: Forces in Plane and in Space.
3. Equilibrium of a Particle: Plane and Space Equilibrium.
4. Analysis of Moments due to Force Systems.
5. Equilibrium of a Rigid Body.
6. Structural Analysis of Trusses.
7. Internal Actions: Axial Force, Shear Force, and Bending Moment Diagrams.
8. Friction.
9. Center of Gravity and Centroid.
10. Moment of Inertia.

Problem Solving Session:

Regular weekly problem solving sessions supervised by course instructors and graduate assistants. Purpose is to enhance understanding of material and allow students to follow up consistently, through monitored practical exercises.

Computer Session:

Occasional computer lab sessions, to replace problem sessions, taught by instructor and supervised by graduate assistants. Purpose is to complement manual analysis by computer analysis of structural systems using SAP2000 software, from simple beams to trusses exercises.

Assessment:

1. Attendance (as below).
2. Individual homework assignments. (5%)
3. Two 1.5-hour quizzes and a 3-hour final exam. (25+25+45%)
4. **ZERO-TOLERANCE** policy on cheating and plagiarism.

Attendance:

Attendance is **mandatory**. Class attendance will be taken and students will be penalized for absences according to the following rules:

- A total of three absences for the semester will be permitted w/o penalty. These **include** instances of sicknesses and other valid excuses. For every absence beyond the third, **1 point** will be deducted from the final course grade. The student may seek to reverse the above, by presenting a petition along with a documented valid excuse explaining the absences, to the FEA Academic Committee.
- As set by AUB regulations, and specified in the CE Student Manual, students who miss more than one-fifth of the sessions of any course in the first ten weeks of the semester will be required to withdraw from the course with a grade of "W".

Please note that the attendance rules listed above will be strictly enforced.

Exam Dates:

Quiz 1: (time/place to be finalized)
Quiz 2: (time/place to be finalized)
Final Exam: To be set by Registrar