İzmir Institute of Technology - Department of Civil Engineering
CE 321 Introduction to Structural Mechanics - Fall 2024-2025 Course Outline

Course Instructor
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Course Assistants
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Course Schedule
Tuesday 13:30 - 15:15, Room: B-213
Thursday 11:45 - 12:30, Room: B-213

Course Conduct
The course will be taught in class at the campus. LMS page is going to be activated and used throughout the semester.

Textbook & Reference

- Mechanics of Materials, R.C. Hibbeler, 9th Edition, Pearson, 2014 (**TB 1**).
- Structural Analysis, R.C. Hibbeler, T.K. Hwee, 8th Edition, Pearson, 2012 (**TB 2**).
- Fundamentals of Structural Analysis, H.H. West, John Wiley & Sons, 1993.

Objectives
The objective is to learn the fundamental principles of structural mechanics and their use for analysis of engineering structures.

Course Content

- Unsymmetrical Bending of Beams (TB 1 , Chapter 6 (Section 6.5))
- Analysis of Determinate Structures (TB 2 , Chapter 2, 3, 4, 5)
  - Structural behavior of trusses, beams, frames, arches and cables
  - Concept of stability and determinacy
  - Static analysis of beams, frames, arches and cables
- Shear Centre (TB 1 , Chapter 7 (Sections 7.4, 7.5))
- Work and Energy Principles (TB 2 , Chapter 8 & Class notes)
  - Principles related to work
    - Work and complementary work
    - Principle of virtual work
    - Displacement calculations using the unit-dummy load method
  - Principles related to energy
    - Potential and complementary potential energy
    - Castigliano's theorems
    - Maxwell's reciprocal theorem, Betti's law
- Introduction to the Force Method of Analysis (TB 2, Chapter 9)

Grading
There will be 2 term exams (% 30 each) and a final (% 40). The exam dates will be announced timely.