CE 224 Mechanics of Materials

2025-26 Fall Semester

Instructor:

Dr. Engin AKTAŞ
Civil Engineering Building, Room C-203 Tel: 750 6809
E-mail: enginaktas@iyte.edu.tr

Teaching Assistant:

Mehmet ATAY
Civil Engineering Building, D-108, Tel: 750 6822
E-mail: mehmetatay@iyte.edu.tr

Time and Location:

Wednesday	08.45 - 10.30	B211
Thursday	15.30 – 17.15	B212

Course description:

Tension, compression, and shear; axially loaded members; Torsion of circular shafts; Equilibrium, compatibility, and constitutive relations; Stresses in beams; Analysis of stress and strain; Deflection of beams; Buckling of columns.

Prerequisite(s): **CE 122**

Text Book:

Mechanics of Materials, *Hibbeler, R.C.* 9th (SI) ed., *Pearson Inc.*, 2014.

References:

***Mechanics of Materials**, Beer, F.P., Johnston, J.T., DeWolf, D.F, and D.F. Mazurek, 6th ed., McGraw-Hill, Inc., 2012.*

***Introductory Mechanics of Deformable Bodies**, Ersoy, U., Wasti, S. T. and E. Canbay, METU Press, Ankara, 2009.*

***Introduction of Mechanics of Solids**, Popov, E.P., Prentice Hall of India, 1978.*

Course Website:

Students are required to enroll to **CE224** on **TEAMS**. All announcements and course material will be posted on TEAMS.

Important:

Attendance and problem solving experience are essential for success in this fundamental course.
Entire course will follow the textbook. Content of the course and the reading assignments given in the tentative course outline given below; refer to Chapters and Sections in the Textbook. Teaching approach, order and sign conventions used will be those of the Textbook.

- *All solved examples in the Textbook, related to the sections included in the course, are to be considered as also solved on the board in the classroom.*
- *Students are expected to master all problems given at the end of each chapter of the textbook.*

Grading:

The final grades will be computed according to the following scheme:

Assessment	Weight	Date
Midterm I	25%	**27.11.2025** (Tentatively)
Midterm II	25%	**08.01.2026** (Tentatively)
Homework	10%	weekly
Final Exam	40%	**21.01.2026** (Tentatively)

Tentative Course Outline

Week	TOPICS	Reading Assignments from textbook
1	Stress	1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7
	Strain	2.1, 2.2
2	Mechanical Properties of Materials	3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7
3	Axial Load	4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 4.7
4	Torsion	5.1, 5.2, 5.4, 5.5, 5.6
5	Bending	6.1, 6.2, 6.3, 6.4
6	Bending	6.5, 6.6
7	Transverse Shear	7.1, 7.2, 7.3
	Midterm I	
8	Transverse Shear	7.4, 7.5
9	Combined Loadings	8.1, 8.2
	Transformation of stress	9.1, 9.2
10	Transformation of stress	9.3, 9.4
11	Deflection of Beams and Shafts	12.1,12.2, 12.4, 12.5, 12.6
12	Deflection of Beams and Shafts	12.7,12.8
13	**Midterm II**	
	Buckling of Columns	13.1
14	Buckling of Columns	13.2, 13.3
	Review	
15	**FINALS**	
16		