IZMIR INSTITUTE OF TECHNOLOGY
DEPARTMENT OF CIVIL ENGINEERING

CE 324 – FUNDAMENTALS OF REINFORCED CONCRETE DESIGN

SPRING 2024-2025

Instructor

Selçuk SAATCI e-mail: selcuksaatci@iyte.edu.tr

Lectures

Mondays 13:30 – 15:15

Thusdays 09:45 – 10:30

Weekly Quizzes

Mondays 13:10

Textbook

Uğur Ersoy, Güney Özcebe, Tuğrul Tankut. Reinforced Concrete, 2017, METU Press.

Parts of the book will be given as a reading assignment. Assigned parts in the book are essential to acquire in depth knowledge about reinforced concrete behavior.

References

- James K. Wight, James G. MacGregor. Reinforced Concrete: Mechanics and Design, Prentice Hall, New Jersey, 2009.
- TS 500: Requirements for design and construction of reinforced concrete structures, Türk Standardları Enstitüsü, Ankara, 2000.

Evaluation

2 Midterms (25% each), Final (25%), Quizzes (10%), Project (%15)

Project

A joint project with AR 332 architecture students will be conducted in groups. Details of the project work will be announced later.

Make-up Exam

Students who miss an exam with a valid official excuse will be allowed to take a make-up exam after the final exam. This exam will include the entire course content and will be counted for all the exams missed.

Course Website

Cloud-LMS system will be used for the course (https://cloud-lms.iyte.edu.tr/). All announcements and course material will be posted on this site. An MS-Teams class will also be formed and used where necessary.

Course Outline

- Introduction to reinforced concrete structures
- Mechanical properties of concrete and steel
- Structural safety
- Reinforced concrete members under uniaxial load
- Effects of confinement in reinforced concrete behavior
- Behavior and design of reinforced concrete members under flexural loads
- Behavior and design of reinforced concrete members under combined flexural and axial loads
- Behavior and design of reinforced concrete members for shear

Reading Assignments from Textbook

Chapter	Section
1. Concrete and Reinforced Concrete	1.1-1.7
2. Basic Behavior of Reinforced Concrete and Fundamentals of Design	2.1-2.7
3. Structural Safety	3.1-3.8
4. Axially Loaded Members	4.1-4.6
5. Ultimate Strength of Members Subjected to Flexure	5.1-5.5
6. Combined Flexure and Axial Load-RC Columns	6.1-6.6
7. Shear-Diagonal Tension	7.1-7.6

All numerical examples in these sections will be considered as solved in class.