IZMIR INSTITUTE OF TECHNOLOGY
DEPARTMENT OF CIVIL ENGINEERING

## CE 324 – FUNDAMENTALS OF REINFORCED CONCRETE DESIGN

SPRING 2025-2026

**Instructor**

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

**Course Assistant**

Cennet YEŞİLYURT       e-mail: cennetyesilyurt@iyte.edu.tr

**Lectures**

Mondays       09:45 – 12:30

**Weekly Quizzes**

Mondays       09:15

**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.

- Uğur Ersoy, Güney Özcebe, Erdem Canbay. BETONARME - Davranış ve Hesap İlkeleri - Cilt 1, Nobel Akademik Yayıncılık, 2023.

**Evaluation**

2 Midterms (30% each), Final (30%), Quizzes (10%)

Weights are tentative

**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. No make-up will be given for missed quizzes.

**Course Website**

All announcements and course material will be posted to MS-Teams class. Code: 2fz2ffc

**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.**