

**COURSE RECORD**

Code	<b>CE 487</b>
Name	<b>Reinforced Concrete II</b>
Hour per week	3 (3 + 0)
Credit	3
ECTS	4
Level/Year	Undergraduate
Semester	Fall
Type	Elective
Prerequisites	CE 221, CE 222

**Description** This course is about slabs, foundations and stairs. First, the general information is supplied for slab members. Classification of slabs, one-way and two-way slabs, ribbed slabs are covered. In a similar way, a general knowledge will be later provided for foundations, followed by discussion of types of foundations. Basic foundations types, spread footing, combined footing, continuous footing, raft foundation members are covered. Lastly, the analysis and design of stairs are examined.

**Objectives**

1. Providing a thorough understanding of the design of reinforced concrete slabs
2. Teaching students the analysis and design of various kinds of footings.
3. Helping students to comprehend the behavior of RS stairs under vertical loads.
4. Providing a general understanding of behavior of RS member under combined load effects.

**Learning Outcomes** *By the end of the course, the student will be able to*

LO1. Define design stages of reinforced concrete structures.  
 LO2. Design continuous beams, one-way and two-way slabs, columns, footings, foundation walls, stairs and retaining walls according to applicable Design Codes.  
 LO3. Calculate earthquake loads and response of simple structures under these earthquake loads.  
 LO4. Apply design provisions as outlined in TS500, TS498 and Turkish Earthquake Design Codes in the design of a multi-story building.

**CONTRIBUTION TO PROGRAMME OUTCOMES\***

	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012
LO1	5	3	3	4	1	1	1	1	0	0	0	0
LO2	5	3	3	4	1	1	1	1	0	0	0	0
LO3	5	2	3	4	1	1	1	1	0	0	0	0
LO4	5	2	3	4	1	1	1	1	0	0	0	0

\* Contribution Level: 0: None, 1: Very Low, 2: Low, 3: Medium, 4: High, 5: Very High

**COURSE CONTENT DETAILS**

<b>Topics</b>	<b>Outcomes</b>
Objectives of design: Serviceability and Ultimate Strength Methods	L01, L02, L03, L04
Design codes and specifications. Loads and overview of design stages.	L01, L02, L03, L04
Introduction to slab system.	L01, L02, L03, L04
Analysis of one-way slabs and continuous beams.	L01, L02, L03, L04
Reinforcement detailing for one-way slabs.	L01, L02, L03, L04
Introduction to two-way slab systems. Reinforcement detailing for two-way slabs.	L01, L02, L03, L04
RC slabs with Joists. Design specifications.	L01, L02, L03, L04
Introduction to flat slab systems. Reinforcement detailing for flat slab systems.	L01, L02, L03, L04
Seismic design and earthquake Loads. Brief introduction to earthquake resistant design of RC structures	L01, L02, L03, L04
Design of beams and columns as per EQ code-reinforcement detailing rules for earthquake resistant structures.	L01, L02, L03, L04
Analysis and design of footings	L01, L02, L03, L04
Analysis and design of retaining walls.	L01, L02, L03, L04
Analysis and design of stairs	L01, L02, L03, L04

**DERS BİLGİLERİ**

Kodu	<b>CE 487</b>
İsmi	<b>Betonarme Yapılar II</b>
Haftalık Saati	3 (3+0)
Kredi	3
AKTS	4
Seviye/Yıl	Lisans
Dönem	Güz
Dersin Dili	İngilizce
Tip	Seçmeli
Ön Şart	CE 221, CE 222

İçerik	Bu ders kapsamında betonarme döşemeler, temeller ve merdivenler ele alınacaktır. Zamanın el vermesi durumunda betonarme istinat duvarlarından da bahsedilecektir. İlk olarak, betonarme döşemeler hakkında temel bilgiler verilecek ve döşeme tipleri anlatılacaktır. Tek yönlü, çift yönlü, kirişsiz ve dişli döşemelerin tasarımından bahsedilecektir. Daha sonra temeller konusu ele alınacaktır. Duvar altı, tekil, birleşik temel tiplerinden bahsedilecektir. Dersin son kısmında betonarme merdivenlerin analizi ve tasarımı işlenecektir.
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