COURSE DESCRIPTION FORM	
Course Code and Title	CE482 REINFORCED CONCRETE DESIGN (SE)
Semester	8
Catalog Description	Load-bearing systems. Critical loading cases. Design of continuous load-bearing systems. Detailing of continuous structural elements. Stair design. Earthquake-resistant structures. Ductility. Specifications and applications. Reinforced concrete design project.
Required Reading	1. ERSOY, Uğur, " Betonarme Temel İlkeler ve Taşıma Gücü Hesabı Cilt 1,2", Evrim Yayınevi,3. Basım, İstanbul, 1997.
Recommended Reading	1. ATIMTAY, Ergin, "Çerçeveli ve Perdeli Betonarme Sistemlerin Tasarımı Cilt 1,2", Bizim Büro Basımevi, Ankara, 2000. 2. TS 500, Betonarme Yapıların Hesap ve Yapım Kuralları, Türk Standartları Enstitüsü, 2000. 3. TS 498, Yapı Elemanlarım Boyutlandırılmasında Alınacak Yüklerin Hesap Değerleri, Türk Standartları Enstitüsü, 1997. 4. ISO 9194, Bases For Design of Structures - Actions Due To The Self-Weight Of Structures, Non-structural Elements And Stored Materials - Density, 5. International Organization for Standardization, 1987. 6. Afet Bölgelerinde Yapılacak Yapılar Hakkında Yönetmelik, Bayındırlık ve İskan Bakanlığı, 2007. 7. SAP2000, Computers and Structures, Berkeley, CA.,USA.
ECTS	5
Prerequisites and co-requisites	Prerequisite of this course is: **CE481 REINFORCED CONCRETE II** **CE383 STRUCTURAL ANALYSIS I** Required attendance to lectures is at least 80%.
Compulsory / Elective	Technical Course
Language of Instruction	English
Aim of Course	Earthquake-resistant building design.
Learning outcomes of the course unit	1.Understanding the design principles of a structure 2.Gaining knowledge about structural irregularities 3. Understanding the related specifications 4. Learning the important aspects in project preparation 5. Learning the assistive software programs on structural system design
Mode of delivery	Face to face
Course content	1.Structural irregularities and related parts in specifications 2. Definition of architectural project, selection of load-bearing system, implementation of load-bearing system in architectural project. 3.Midterm I 4**.** Preliminary design and sizing of beams, columns and curtain walls. Calculation of structural load 5.Calculations on reinforced concrete slabs according to live and dead loads and projects 6**.** Load transfer from slabs to beams and calculating loads carried by beams **7.** Determination of building period and calculation of earthquake load applied to the structure according to Equivalent Earthquake Load Method.

	8. Midterm II, Determination of building period and calculation of earthquake load applied to the structure according to Equivalent Earthquake Load Method 9. Modelling the load-bearing system by software programs and detailing the loading combinations that will be used during analysis of the structure. Static analysis of the structure using SAP 2000. Final design of load-bearing structural elements. 10. Reinforced concrete design of beams and implication to the project 11. Reinforced concrete design of columns and implication to the project 12. Reinforced concrete design of curtain walls and implication to the project 13. Reinforced concrete design of continuous foundations and implication to the project 14. Reinforced concrete design of continuous foundations and implication to the project 15. Reinforced concrete design of stairs and implication to the project
Planned learning activities and teaching methods	3 hours of theoretical class (3+0) Web search, library work Designing and applying materials Midterms and preparations Final examination and preparations

Assessment methods and criteria

	Number	Total Impact (%)
Midterm	3	60
Assignment	-	-
Exercises	-	-
Projects	1	10
Practice	-	-
Quiz	-	-
Contribution of In-term Studies to Overall Grade (%)		70
Contribution of Final Examination to Overall Grade (%)		30
Attendance		

Workload

Efficiency	Total Week Count	Weekly Duration (InHour)	Total Workload in Semester
Theoretical Study Hours of Course Per Week	14	3	42
Practicing Hours of Course Per Week	14	0	0
Reading	14	0	0
Searching in Internet and Library	14	1	14
Designing and Applying Materials	14	2	28
Preparing Reports	14	0	0
Preparing Presentation	14	0	0
Presentation	14	0	0
Midterms and Studying for Midterm	3	4	12
Final and studying for final	1	4	4
Other	1	32	32

		Total workload:					132	
		Total workload / 25:					5,28	
		ECTS:					5	

Course Contribution to Program	No	Program Learning Outcomes	1	2	3	4	5
	1	Adequate knowledge in mathematics, science and engineering subjects pertaining to the relevant discipline; ability to use theoretical and applied knowledge in these areas in complex engineering problems.			X		
	2	Ability to identify, formulate, and solve complex civil engineering problems; ability to select and apply proper analysis and modeling methods for this purpose.				X	
	3	Ability to design a complex system, process, device or product under realistic constraints and conditions, in such a way as to meet the desired result; ability to apply modern design methods for this purpose.				X	
	4	Ability to devise, select, and use modern techniques and tools needed for analyzing and solving complex problems encountered in civil engineering practice; ability to employ information technologies and to use at least one computer programming language effectively.				X	
	5	Ability to design and conduct experiments, gather data, analyze and interpret results for investigating complex civil engineering problems or discipline specific research questions.					
	6	Ability to work efficiently in intra-disciplinary and multi-disciplinary teams.					X
	7	Ability to work individually.					X
	8	Ability to communicate effectively in Turkish, both orally and in writing; ability to write effective reports and comprehend written reports.	X				
	9	Knowledge of English of B1 level according to Common European Framework of Reference.			X		
	10	Prepare design and production reports, make effective presentations, and give and receive clear and intelligible instructions.					X
	11	Recognition of the need for lifelong learning; ability to access information, to follow developments in science and technology, and to continue to educate him/herself.				X	
	12	Consciousness to behave according to ethical principles and professional and ethical responsibility.				X	
	13	Knowledge on standards used in civil engineering practice.					X
	14	Knowledge about business life practices such as project management, risk management, and change management.				X	
	15	Awareness in entrepreneurship, innovation; knowledge about sustainable development.					
	16	Knowledge about the global and social effects of engineering practices on health, environment, and safety, and contemporary issues of the century reflected into the field of engineering.					X
	17	Awareness of the legal consequences of engineering solutions.					X
Name of lecturers and contact information	Assoc. Dr. Bengi Aykaç, baykac@gazi.edu.tr						