

IM482 REINFORCED CONCRETE DESIGN		CIVIL ENGINEERING	
Semester	Credit Structure		
	Lecture	Recitation	Laboratory
8	3	0	0
<b>Language</b>	Turkish		
<b>Compulsory / Elective</b>	Compulsory		
<b>Prerequisites</b>	IM 384, IM 481		
<b>Catalog Description</b>	Load systems, critical loading cases, groups of loading, design of continuous structures, detailing continuous members, design of stairs, earthquake resistant structures, ductility, code applications, reinforced concrete design.		
<b>Course Objectives</b>	To teach the design of structural systems and members		
<b>Course Outcomes</b>	Teaching of assistant programs used for designing of systems		
<b>Textbook and /or References</b>	<p>ERSOY, Uğur, “ Betonarme Temel İlkeler ve Taşıma Gücü Hesabı Cilt 1,2”, Evrim Yayınevi,3. Basım, İstanbul, 1997</p> <p>ATIMTAY, Ergin, “Çerçeve ve Perdeli Betonarme Sistemlerin Tasarımı Cilt 1,2”, Bizim Büro Basımevi, Ankara, 2000</p> <p>TS 500, Betonarme Yapıların Hesap ve Yapım Kuralları, Türk Standartları Enstitüsü, Ankara, 1998</p> <p>TS 498, Yapı Elemanlarını Boyutlandırılmasında Alınacak Yüklerin Hesap Değerleri, Türk Standartları Enstitüsü, 1997</p> <p>ISO 9194, Bases For Design of Structures – Actions Due To The Self-Weight Of Structures, Non-structural Elements And Stored Materials – Density, International Organization for Standardization, 1987</p> <p>Afet Bölgelerinde Yapılacak Yapılar Hakkında Yönetmelik, Bayındırlık ve İskan Bakanlığı, 1998</p> <p>SAP90, Computers and Structures, Berkeley, Ca.,USA.</p>		
<b>Assessment Criteria</b>		<b>Quantity</b>	<b>Percentage</b>
	<b>Midterm Exams</b>		
	<b>Quizzes</b>		
	<b>Homeworks</b>		
	<b>Projects</b>		
	<b>Term Paper</b>	1	100
	<b>Laboratory Work</b>		
	<b>Other</b>		
	<b>Final Exam</b>		
<b>Course Category by Content (%)</b>	<b>Mathematics and Basic Sciences</b>		
	<b>Engineering Science</b>		70
	<b>Engineering Design</b>		30
	<b>Social Sciences</b>		
<b>Instructors</b>	<b>Prof. Dr. Hüsnü CAN , Öğr. Gör. Dr. Bengi Aykaç</b>		

## COURSE PLAN

Week	Topics
1	Deciding the structural system of the building with respect to architectural design. Advantages and disadvantages of systems.
2	Design of reinforced concrete slabs considering dead and live loads.
3	Pre-design of columns and shear walls. Determination of building weight.
4	Calculation of the first natural period of the building and finding out the earthquake loading due to each story by Equivalent Earthquake Load Method.
5	Explanation of load transfer mechanism between slabs and beams. Calculation of beam loads.
6	3D modeling of structural system by computer and determination and explanation of load combinations which will be used in analysis.
7	Static analysis of the system by using SAP90.
8	Static analysis of a part of the building by hand using CROSS or BIRO method due to vertical loads and MUTO method due to horizontal loading.
9	Reinforced concrete design of shear walls.
10	Reinforced concrete design of beams.
11	Reinforced concrete design of columns.
12	Reinforced concrete design of continuous footages.
13	Reinforced concrete design of stairs.
14	Explanation of some important issues in drawings of structural members in project. Sampling of the calculations and drawings in the project by using an professional project as an example.

## RELATIONSHIP BETWEEN THE COURSE AND DEPARTMENT CURRICULUM

Program Outcomes		1	2	3
1	An ability to apply knowledge of mathematics, science, and engineering			x
2	An ability to design and conduct experiments, as well as to analyze and interpret data		x	
3	An ability to design a system, component, or process to meet desired needs			x
4	An ability to function on multi-disciplinary teams	x		
5	An ability to identify, formulate, and solve engineering problems			x
6	An understanding of professional and ethical responsibility			x
7	An ability for effective written and oral communication in Turkish and English		x	
8	The broad education necessary to understand the impact of engineering solutions in a global and societal context		x	
9	A recognition of the need for, and ability to engage in life-long learning			x
10	A knowledge of contemporary issues			x
11	An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice			x

**Contribution of the course : 1:None 2:Partially 3:Completely**