IM 457 DESIGN OF SPECIFIC TRANSPORTATION STRUCTURES			CIVIL ENGINEERING
Semester	**Credit Structure**		
	Lecture	**Recitation**	**Laboratory**
7	3	-	-
Language	Turkish		
Compulsory / Elective	Elective		
Prerequisites	None		
Catalog Description	General transportation super-structures. Types and features of bridge, viaduct, tunnel. Design methods. Pre-stressed and post-stressed design methods and applications		
Course Objectives	Introduction specific transportation structures and design within the context of engineering economics. Optimization and application of new technologies.		
Course Outcomes	Familiarity with specific transportation structures. System and cross-section optimization and acquisition of necessary skills for system and cross-section design. Skills for applying of new technologies.		
Textbook and /or References	GUYON, Y. "Béton précontrainte, Etude theorique expérimentale" Editions Eyrolles, Paris 1958 Leonhard, F. Prof. Dr. "Spannbeton für die Praxis" Wilhelm Ernst und Sohn, Berlin 1961 Lin, T.Y. "Design of Prestressed Concrete Structures" John Wiley & Sonc Inc. New-York 1961 Göksu, E. "Öngerilimli Betonların, tarihçesi, tanımı ve yararları" İMO Türkiye Mühendislik Haberleri Kasım 1975, Ankara Göksu, E. "Öngerilimli Betonun Gereksindirdiği yapı gereçleri" İMO Türkiye Mühendislik Haberleri Mart 1976, Ankara Göksu, E. "Öngerilimli Betonun Statiği ve Hesap yöntemleriİ IMO Türkiye Mühendislik Haberleri Eylül 1975, Ankara Göksu, E. "Önceden kaynaşmalı (Pretension) ve Sonradan kaynaşmalı (Post tension) Öngerilimli yapık (prefabrik) öğelerin yapım ilkeleri" IMO Türkiye Mühendislik Haberleri Kasım 1976 Göksu, E. "Önyapımlı İskelet Sistemler ve Niğbaş Uygulaması" TÜBİTAK Eylül 1980, Ankara Göksu, E. "Ard-germeli Betonarme düz döşemeler" Yapı Dünyası Ağustos 1998, Ankara		
Assessment Criteria		**Quantity**	**Percentage**
	Midterm Exams		
	Quizzes		
	Homeworks		
	Projects	2	40
	Term Paper	1	50
	Laboratory Work		
	Other	1	10
	Final Exam		
Course Category by Content (%)	**Mathematics and Basic Sciences**		
	Engineering Science	40	
	Engineering Design	50	
	Social Sciences	10	
Instructors	Yrd. Doç. Dr. Hikmet BAYIRTEPE		

COURSE PLAN	
Week	**Topics**
1	An overview of specific transportation structures
2	Materials: Concrete, Fiber Concrete, Reinforced Concrete, Prestressed Concrete, Steel, Timber
3	Detail Selection; Cross-section optimization
4	System Optimization
5	Culverts, Bridges, Viaducts
6	Midterm Exam
7	Design optimal of span length for bridges and viaducts
8	Prestressed Concrete Definitions and Historical Development
9	Areas of Application and Types of Prestressed Concrete
10	Methods of Calculation / Design and Verification
11	Midterm Exam
12	Discussion of Midterm I / Design of a Post-tension Slab
13	Discussion of Midterm II / Tunnels
14	Pipelines and aerial cable systems (teleferic etc.)

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			