

COURSE CATALOG

Course Code: CE 462				Course Name: Advanced Concrete Technology			
Semester	T + P + L	Credits	ECTS	Language of Instruction	Course Type	Instruction Methods	Prerequisite(s)
6-7-8	3 + 0 + 0	3	6	English	Departmental Elective(D2)	Lecture	-
Course Objectives			Fundamental concepts (workability, strength, dimension stability, and durability) will be given in this course. Then updated concrete technology (micro structural engineering, development of special concretes); concrete fracture and modelling; non-destructive evaluation methods for concrete structures, pumped concrete, spreading concrete at hot and cold weather conditions, underwater concrete, vacuum concrete will be considered.				
Topics Covered			Concrete production techniques. Quality control. Mix design for high strength concrete. Admixtures for concrete. Ready-mix concrete. Non-destructive testing. Pumped concrete, Spreading concrete at hot and cold weather conditions. Underwater concrete, Vacuum concrete. Lightweight concrete				
Learning Outcomes of the Course			After successfully completing this course students should be able: 1. an understanding of advanced concrete terminology. [1,2,3] 2. an understanding of the design requirements for advanced concrete. [13,14] 3. an understanding of the construction and inspection requirements the buildings [12,13,14] an understanding of safety analysis. [2,3] <i>[Note that the numbers in between the brackets address the bullet numbers in the program outcomes list.]</i>				
ISCED Category of the Course			52 Engineering				
Textbook			J.N. Newman, B.S. Choo, Advanced Concrete Technology 3, Butterworth Heinemann, 2003.				
Recommended Sources			1.M.Süheyl Akman, "Deniz Yapılarında Beton Teknolojisi"İTÜ Matbaası,1992 2. Bekir Postacıoğlu, "Beton", Cilt 1-2, Teknik Kitaplar Y., 1986,1987. 3. A.M.Neville ve J.J. Brooks "Concrete Technology", Longman S.T., 1987. 4. P.H. Perkins, "Repair, Protection and Waterproofing of Concrete Structures" 1- Elsevier Applied Science Publishers, 1986.				

WEEKLY SCHEDULE

Week	Theoretical Topic	Applied / Laboratory Topics
1	Review.	
2	Concrete production techniques.	
3	Concrete production techniques.	
4	Quality control.	
5	Mix design for high strength concrete.	
6	Admixtures for concrete.	
7	Ready-mix concrete.	
8	Non-destructive testing.	
9	Pumped concrete,	
10	Spreading concrete at hot weather conditions.	
11	Spreading concrete at cold weather conditions.	
12	Underwater concrete,	
13	Vacuum concrete.	
14	Lightweight concrete.	

COURSE ASSESSMENT POLICY

	Activities	Number	Contribution (%)
Studies throughout the term	Quiz	3	05
	Term Homework/ Project		
	Reports	-	-
	Graduation Thesis/ Project	-	-
	Seminar	-	-

	Homework	5	10
	Presentations	-	-
	Midterm Exams	2	40
	Project		
	Laboratory	-	-
	Other (attendance)	14	5
FINAL EXAM		1	40
Total			100

CONTRIBUTION OF THE COURSE TO CIVIL ENGINEERING PROGRAM OUTCOMES

	Program Outcomes	1	2	3
1	The ability to apply knowledge of mathematics, science, and engineering			X
2	The ability to identify, formulate, and solve engineering problems			X
3	The ability to design a system or component to meet desired needs with realistic constraints such as economic, environmental, social, ethical, health and safety, manufacturability and sustainability			X
4	The ability to analyze and interpret data			X
5	The ability to design and conduct experiments and apply experimental results to improve processes			X
6	The ability to convey technical material through oral presentations and written papers/reports		X	
7	The ability to function within multidisciplinary teams			X
8	The understanding of professional and ethical responsibilities			X
9	The understanding of the impact of engineering on society		X	
10	The understanding of the necessity to engage in life-long learning		X	
11	The understanding of management and leadership principles and techniques		X	
12	The appreciation of the role of research in civil engineering problems			X
13	A knowledge of contemporary issues in civil engineering			X
14	The ability to use modern engineering techniques, skills, and tools		X	
15	The ability to understand and explain basic concepts in management, business, and leadership		X	
16	A commitment to quality, punctuality and continuous improvement		X	

Contribution Level: 1 low, 2 medium, 3 high

ECTS-WORKLOAD TABLE

ACTIVITIES	Number	Duration (Hour)	Workload(Hour)
Lecture Time	14	3	42
Final Exam (Including Preparation Time)	1	14	14
Quiz	3	4	12
Term Homework / Project	-	-	-
Reports			
Graduation Thesis/Project	-	-	-
Seminar			
Study Time Outside the Class	14	3	42
Homework	5	4	20
Presentations	-	-	-
Midterm Exams (Including Preparation Time)	2	10	20
Project	-	-	-
Laboratory	-	-	-
Total Workload			150
ECTS Credits of the Course (Total Workload / 25)			6

Last update on 19.01.2014	Coordinator / PREPARED BY Esin Inan	APPROVED BY Esin Inan
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