

COURSE CATALOG

Course Code: CE 356				Course Name: Highway Engineering			
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	None
Course Objectives			To introduce students a fundamental knowledge of transportation planning, highway engineering and design.				
Topics Covered			Introduction. Transportation planning process. Forecasting future traffic flows. Scheme appraisal for highway projects. Basic elements of highway traffic analysis. Determining the capacity of highways. Design of intersections. Geometric alignment and design. Highway pavement materials and design. Structural design of pavement thickness. Pavement maintenance. Drainage.				
Learning Outcomes of the Course			<p>The students who pass this course should:</p> <p>1- gain a basic knowledge of highway engineering and develop analytical and mathematical skills to identify the highway engineering problems [1, 2, 3, 12]</p> <p>2- be able to analyze, assess and manipulate field data obtained by insitu observations [4, 5]</p> <p>3- develop skills for computer usage of packages such as word, excel, matlab [4,5]</p> <p>4- understand the practical applications of highway engineering concepts used in designs of highways [7, 12, 13, 14]</p> <p>5- gain a basic knowledge about various case studies of highway designs [7, 8, 9, 11, 12, 13,14]</p> <p>6- develop skills of conveying technical material through oral presentations and written papers/reports [6, 15, 16]</p> <p>[Note that the numbers in brackets refer to the bullet numbers in the program outcomes list.]</p>				
ISCED Category of the Course			52 Engineering				
Textbook			M. Rogers. <i>Highway Engineering</i> . Blackwell Science, 2003.				
Recommended Sources			N. Yayla. <i>Karayolu Mühendisliği</i> . Birsen Yayınevi, 2009.				

WEEKLY SCHEDULE

Week	Theoretical Topic	Applied / Laboratory Topics
1	Introduction. Transportation planning process	
2	Forecasting future traffic flows.	
3	Scheme appraisal for highway projects.	
4	Basic elements of highway traffic analysis.	
5	Determining the capacity of highways	
6	Design of intersections.	
7	Design of intersections. Midterm 1.	
8	Geometric alignment and design.	
9	Geometric alignment and design.	
10	Highway pavement materials and design.	
11	Structural design of pavement thickness.	
12	Pavement maintenance. Midterm 2.	
13	Pavement maintenance	
14	Drainage.	

COURSE ASSESSMENT POLICY

	Activities	Number	Contribution (%)
Studies throughout the term	Quizzes	-	-
	Term Homework/ Project	-	-
	Reports	-	-
	Graduation Thesis/ Project	-	-

	Seminar	-	-
	Homeworks	5	30
	Presentations	-	-
	Midterm Exams	2	35
	Project	-	-
	Laboratory	-	-
	Other (field work)	-	-
FINAL EXAM		1	35
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 Preperation Time)	1	25	25
Quizes	-	-	-
Term Homework / Project	-	-	-
Reports	-	-	-
Graduation Thesis/Project	-	-	-
Seminar	-	-	-
Study Time Outside the Class	14	2	28
Homeworks	5	5	25
Presentations	-	-	-
Midterm Exams (Including Preperation Time)	2	15	30
Project	-	-	-
Laboratory	-	-	-
Total Workload			150
ECTS Credits of the Course (Total Workload / 25)			6

Last update on 08.01.2014	Coordinator / PREPARED BY Cihan BAYINDIR	APPROVED BY Esin İnan
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