



**HASAN KALYONCU UNIVERSITY**  
**Faculty of Engineering**  
**Course Description Form**

<b>COURSE:</b> Highway Engineering				
<b>CODE:</b> CE381	<b>SEMESTER:</b> FALL			
<b>LANGUAGE:</b> ENGLISH	<b>TYPE:</b> COMPULSORY			
<b>PRE-REQUISITES:</b> - <b>CO-REQUISITES:</b> -	<b>THEORY</b>	<b>PRACTICAL</b>	<b>CREDIT</b>	<b>ECTS</b>
<b>WEEKLY HOURS:</b> 4	2	2	3	5

**CONTENT OF THE COURSE:**

Introduction and basic concepts. Characteristics of road users. Stopping-Visibility distance. Vehicle movements. Overtaking distance and duration. Characteristics of highway traffic. Capacity of roads. Service Level of roads. Geometric properties of the road and selection of standards. Route research. Horizontal curves. Superelevation. Transition curves. Longitudinal section. Vertical curves.

**OBJECTIVE OF THE COURSE:**

Giving the basic design and projecting information about highway engineering and to enable the students to plan and design all components of the highways in terms of traffic safety and economic aspects, to meet the traffic loads and fulfill the intended functions and conditions.

**WEEKLY SCHEDULE AND PRE-STUDY PAGES**

<b>Week</b>	<b>Topics</b>
1	Introduction and Basic Concepts
2	Characteristics of road users
3	Vehicle characteristics and movements.
4	Characteristics of highway traffic.
5	Capacity of roads
6	Geometric properties of the road
7	Route research
8	Midterm
9	Horizontal curves
10	Superelevation
11	Transition curves
12	Superelevation and Transition curves
13	Longitudinal section
14	Vertical curves

**TEXTBOOK:**

- *“Introduction to Highway Engineering (Unpublished Lecture notes), Dr. Mustafa Sinan Yardım, YTU, ISTANBUL, 2012.*
- *A Policy on Geometric Design of Highways and Streets, AASHTO, 2001.*

- *Highway Engineering, Nadir Yayla, ISTANBUL 2002.*
- *Highway Constructions Design and Application, İlhan Süttaş, Güven Öztaş, 1986*
- *Related research papers and web sites.*
- *A Policy on Geometric Design of Highways and Streets, AASHTO, 2001.*
- *Highway Capacity Manual (HCM 2000), Transportation Research Board, 2000.*
- *Highway Design and Traffic Safety Engineering Handbook, R. Lamm, B. Psarianos, T. Mailaender, McGraw-Hill, 1999.*

*Introduction to Transportation Engineering, James K. Banks, McGraw-Hill, 2002..*

<b>EVALUATION SYSTEM:</b>		
<b>IN-TERM STUDIES</b>	<b>QUANTITY</b>	<b>PERCENTAGE (%)</b>
Midterm Exam	1	30
Homework	3	20
Laboratory works		
Quiz		
Final Exam	1	50
<b>TOTAL</b>		100
CONTRIBUTION OF INTERM STUDIES TO OVERALL GRADE	4	50
CONTRIBUTION OF FINAL EXAMINATION TO OVERALL GRADE	1	50
<b>TOTAL</b>	5	100

<b>COURSE CATEGORY:</b>	<b>PERCENTAGE (%)</b>
Mathematics and Basic Sciences	
Engineering	50
Engineering Design	50
Social Sciences	

<b>TABLE OF ECTS / WORKLOAD:</b>			
<b>Activities</b>	<b>QUANTITY</b>	<b>Duration (Hour)</b>	<b>Total Workload</b>
Course Duration	13	4	52
Hours for off-the-classroom study (Pre-study, practice)	14	6	84
Laboratory works			
Mid-term	1	2	2
Final examination	1	2	2
Homework	3	1	3
Quiz			
<b>Total Work Load</b>			<b>143</b>

<b>Total Work Load / 30</b>			<b>4,7</b>
<b>ECTS Credit of the Course</b>			<b>5</b>

	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>	<b>PO11</b>
<b>LO1</b>	3	0	0	0	0	0	0	0	0	0	0
<b>LO2</b>	3	0	0	0	0	0	0	0	0	0	0
<b>LO3</b>	3	3	3	0	0	0	0	0	0	0	0
<b>LO4</b>	0	3	0	0	0	0	0	0	0	0	0
PO: Program Outcomes   LO: Learning Outcomes Values: 0: None   1: Low   2: Medium   3: High											

<b>INSTRUCTOR(S):</b>	Asst.Prof.Dr. D1a Eddin NASSANI
<b>FORM PREPARATION DATE:</b>	22.05.2019

<b>LEARNING OUTCOMES OF THE COURSE:</b>	<b>PROGRAM OUTCOMES:</b>
<p><b>LO1:</b> To learn the design criteria for road construction.</p> <p><b>LO2:</b> To learn the design standards required for road construction.</p> <p><b>LO3:</b> Max. slope, project speed, project traffic, route research, zero polygon, horizontal and vertical curves, cross-section design criteria such as road construction using a road design.</p> <p><b>LO4:</b> To reach the level that will construct or control the road construction</p>	<p><b>PO1:</b> 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.</p> <p><b>PO2:</b> Ability to identify, formulate, and solve complex engineering problems; ability to select and apply proper analysis and modeling methods for this purpose.</p> <p><b>PO3:</b> 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.</p> <p><b>PO4:</b> Ability to devise, select, and use modern techniques and tools needed for analyzing and solving complex problems encountered in engineering practice; ability to employ information technologies effectively.</p> <p><b>PO5:</b> Ability to design and conduct experiments, gather data, analyze and interpret results for investigating complex engineering problems or discipline specific research questions.</p> <p><b>PO6:</b> Ability to work efficiently in intra-disciplinary and multi-disciplinary teams; ability to work individually.</p> <p><b>PO7:</b> Ability to communicate effectively in Turkish, both orally and in writing; knowledge of a minimum of one foreign language; ability to write effective reports and comprehend written reports, prepare design and production reports, make effective presentations, and give and receive clear and intelligible instructions.</p> <p><b>PO8:</b> 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.</p>

	<p><b>PO9:</b> Consciousness to behave according to ethical principles and professional and ethical responsibility; knowledge on standards used in engineering practice.</p> <p><b>PO10:</b> Knowledge about business life practices such as project management, risk management, and change management; awareness in entrepreneurship, innovation; knowledge about sustainable development.</p> <p><b>PO11:</b> 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; awareness of the legal consequences of engineering solutions.</p>
--	---