

University of Southern California  
CE 583 – Design of Transportation Facilities  
Friday 5:00 -7:40 PM, KAP 113  
Spring 2019

Instructor: Amir Elsharief, Ph.D, P.E  
Office Location: TBD  
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**General Information**

This course provides the basic knowledge necessary for planning, design, construction and operation of transportation facilities. Highway, and Airport facilities will be covered in this course. However, the main emphasis will be on the Highway facility. Upon the successful completion of the course, the students will have basic understanding of the process of transportation projects development from initiation to completion and the factors that may influence those projects such as social, economic and environmental considerations.

**Prerequisites:** CE 519 and CE 457

**Grading**

	Points
Homework	15%
Midterm Exam	35%
Project	15%
Final Exam	<u>35%</u>
Total:	100%

**Textbook:**

“Traffic and Highway Engineering,” Garber & Hoel, 5<sup>th</sup> edition,  
Publisher: Cengage Learning, 2015

**References:**

- i. “A Policy on Geometric Design of Highways and Streets,” AASHTO, 6th Edition, 2011.
- ii. “Transportation Planning Handbook,” ITE, 3<sup>rd</sup> edition, 2009.

### Homework Policy:

1. Homework should be solved independently. If there is any evidence of cheating, relevant University policies and regulations will be invoked.
2. Homeworks must be submitted by the due date. Late homework will not be accepted.
3. Be neat, solve the problems systematically and show all steps. **Answers that appear magically will not receive any credit.**

### Research Project:

Each student will have the opportunity to chose a topic from a list of possible research topics. The research report shall be 10—15 typed pages, and should be submitted before the final exam. All students will be given the opportunity to present their research findings and share their results with the rest of the class.

### Final Grades:

Final letter grades will be assigned as follows:

Points	Letter Grade
90-100	A
80-89	B
70-79	C
60-69	D
<60	F

### Tentative Course Outline:

Week	Topics	Reading
1 01/11	<b>Introduction</b> 1. Transportation Emergence 2. Transportation Systems 3. Highway functional calssification	Chapter 2 Handouts
2 01/18	<b>Highway Geometric Design</b> 1. Horizontal Alignment 2. Vertical Alignment	Chapter 15 Handouts
3 01/25	<b>Superelevation</b>	Chapter 15 Handouts

<b>Week</b>	<b>Topics</b>	<b>Reading</b>
4 02/01	<b>Superelevation continues</b>	Handouts
5 02/08	<b>Bridge Structures, Sound barriers and retaining walls</b>	Handouts
6 02/15	<b>Intersections Design</b>	Chapter 7 and 8
7 02/22	<b>Interchanges Design</b>	Handouts
8 03/01	<b>Roadside Safety Design</b>	Handouts
9 03/08	<b>Midterm exam</b>	
10 03/22	<b>Highway Drainage Design</b>	Handouts
11 03/29	<b>Pavement Design</b>	Chapters 16, 19, 20 and 21
12 04/05	<b>Pavement Design Continues</b>	
13 4/12	<b>Airport Planning and Design</b> i. Operations ii. Layout	Handouts
14 04/19	<b>Runway Design and Operations</b> a. Aircraft Usage <b>Pavement Design</b>	Handouts
15 04/26	<b>Project Presentations</b>	
16 During Finals Week	<b>Final Exam (2 hours)</b>	