

University of Southern California
CE 583 – Design of Transportation Facilities
Friday 5:00 -7:40 PM, KAP 113
Spring 2018

Instructor: Amir Elsharief, Ph.D, P.E
Office Location: TBD
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Office Hours: By appointment
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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, 5th edition,
Publisher: Cengage Learning, 2015

References:

- i. “Highway Design Manual,” California Transportation Department (CALTRANS), 2016.
- ii. “A Policy on Geometric Design of Highways and Streets,” AASHTO, 6th Edition, 2011.

iii. "Transportation Planning Handbook," ITE, 3rd 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 choose 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 01/12	Introduction 1. Transportation Emergence 2. Transportation Systems 3. Highway functional classification	Chapter 2 Handouts
2 01/19	Highway Geometric Design 1. Horizontal Alignment 2. Vertical Alignment	Chapter 15 Handouts
3 01/26	Superelevation	Chapter 15 Handouts

Week	Topics	Reading
4 02/02	Superelevation continues	Handouts
5 02/09	Bridge Structures, Sound barriers and retaining walls	Handouts
6 02/16	Intersections Design	Chapter 7 and 8
7 02/23	Interchanges Design	Handouts
8 03/02	Roadside Safety Design	Handouts
9 03/09	Midterm exam	
10 03/23	Highway Drainage Design	Handouts
11 03/30	Pavement Design	Chapters 16, 19, 20 and 21
12 04/06	Pavement Design Continues	
13 4/13	Airport Planning and Design i. Operations ii. Layout	Handouts
14 04/20	Runway Design and Operations a. Aircraft Usage Pavement Design	Handouts
15 04/27	Project Presentations	
16 During Finals Week	Final Exam (2 hours)	