Fall 2015 CE 471: Principles of Transportation Engineering
Sonny Astani Department of Civil and Environmental Engineering
University of Southern California

This is a 3-unit undergraduate civil engineering course covering the principles of design, planning, operation and control of transportation systems.

Course Instructor

Ketan Savla, KAP 254A, 213 740 0670, ksavla@usc.edu.
Office hours: Mondays 11 am - noon and Fridays 11 am- noon in 254A, or by appointment.

Teaching Assistant

TBD
Office hours: TBD.

Class location, hours, and website

Lectures will be held Mondays 6:30-9:10 PM in room KAP 148.
The class will use the blackboard website at USC, https://blackboard.usc.edu/, as the primary medium for distribution of course material and announcements.

Prerequisites

Students enrolling in this course are required to have successfully met all the prerequisite requirements as established by the Sonny Astani Department of Civil and Environmental Engineering. In addition, prior experience with an introductory course on systems and/or on optimization will be helpful but not required.

Grading

- 10% Class attendance and participation
- 20% Homeworks
  There will be a total of six homeworks in this course.
- 20% Midterm exam (Tentatively October 12 2015)
- 20% Class project
- 30% Final exam (December 14 2015)

Student will be graded based on their percentile standings compared to the overall class performance, using the following breakdown (subject to revision):

90-100th percentile	A
80-89th percentile	B
70-79th percentile	C
60-69th percentile	D
<60th percentile	F

Required textbook

C. S. Papacostas and P. D. Prevedouros, "*Transportation Engineering and Planning*", Third Edition, Prentice Hall, 2001.

Additional material

Additional material will be posted on the course blackboard website as and when required.

Class project

The purpose of the class project is to encourage students to explore material related to but outside the material covered in lectures. The process is supposed to get students acquainted with tools for independent study.

Students are required to form groups of 3 each, and select a topic for their project. Each group is expected to make project proposal, interim report, final report and in-class presentation. In each group, students are expected to collaborate to prepare the project proposal, interim report, final report and in-class presentation; however, individual contribution of every student will be tested in the Q & A session following the in-class presentation.

Important dates for the class project

Project proposal due: October 5, 2015 (via email to the instructor)
Interim report due: November 13, 2015 (via email to the instructor)
In-class project presentation: November 30, 2015
Final report due: December 4, 2015 (via email to the instructor)

Guidelines and specifications for the class project

Project topic: The project topic should be related to the material covered in the class. Each group is then expected to choose papers, book chapters or case studies related to their topic, do independent study and develop new results. A good starting point to search for topics and material for the project is the set of references at the end of chapters in the textbook. New results could be in the form of simulation studies, case studies on data sets, etc.

Project proposal: One page document, minimum of 10 pt, single spaced, single column, containing:

1. project topic,
2. names of group members,
3. references to the material that the group plans to cover, and
4. short description of the goals of the project.

Interim report: A maximum of 4 page document, minimum of 10 pt, single spaced, single column, containing:

1. project topic,
2. names of group members,
3. review of literature,
4. preliminary results.

Final report: A maximum of 8 page document, minimum of 10 pt, single spaced, single column, containing:

1. project topic,
2. names of group members,
3. review of literature,
4. final results and conclusion.

In-class presentation: A total of 15 min consisting of a 10-min presentation (maximum of 10 slides) shared between all the group members, followed by a 5 min Q& A session with the instructor, where questions will be asked to every group member about any part of the project.

Tentative Course Schedule

Note: The course schedule will be regularly updated during the semester by taking into account the progress of the class.
$*$: Homework # 3 will be due on Friday, October 9 2015.

Academic integrity

Students are allowed to discuss homework problems with each other, but they should write and submit the solutions independently.
Students are advised to refer to the university guidelines at https://usccollege.adobeconnect.com/_a839705232/academicintegrity which also applies to this course. Scampus, the Student Guidebook, contains the Student Conduct Code in Section 11.00, while the recommended sanctions are located in Appendix A: http://scampus.usc.edu/university-governance/. Students will be referred to the Office of Student Judicial Affairs and Community Standards for further review, should there be any suspicion of academic dishonesty. The Review process can be found at: http://www.usc.edu/student-affairs/SJACS/.

Date	Topics	Reading Assignment	Homework # out	Homework # due
24 Aug	Introduction, Equations of motion	Ch. 1, Ch. 2: sections 2.1 thru 2.2	1	
31 Aug	Human factors, Geometric Design	Ch. 2: sections 2.3 thru 2.4		
7 Sept	No class - Labor day			
14 Sep	Geometric Design, Traffic Flow Theory	Ch. 2: section 2.4, Ch. 3: sections 3.1 thru 3.3	2	1
21 Sep	Traffic Flow Theory & Probability	Ch. 3: section 3.4, Ch. 13: sections 13.1 and 13.2		
28 Sep	Traffic Flow Theory & Statistics	Ch. 13: sections 13.3 and 13.4, Ch. 3: section 3.5	3*	2
5 Oct	Traffic Flow Theory & Capacity Analysis	Ch. 3: section 3.6, Ch. 4: sections 4.3 thru 4.5		
12 Oct	Mid-term Exam			
19 Oct	Capacity Analysis	Ch. 4: sections 4.5 thru 4.8	4	
26 Oct	Transportation planning	Ch. 7		
2 Nov	Travel demand forecasting	Ch. 8: sections 8.1 thru 8.4	5	4
9 Nov	Travel demand forecasting	Ch. 8: sections 8.5 thru 8.7		
16 Nov	Transportation impacts and evaluation and choice	Ch. 9, Ch. 10 and Ch. 11	6	5
23 Nov	Advanced Topics: Network flows, Wardrop Equilibrium			
30 Nov	Class project presentations			6
14 Dec	Final exam			