

Fall 2013 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 159.

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 seven homeworks in this course.
- 20% Midterm exam (Tentatively October 6)
- 20% Class project
- 30% Final exam (Date TBD)

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

90-100 th percentile	A
80-89 th percentile	B
70-79 th percentile	C
60-69 th percentile	D
<60 th 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 13, 2014

Interim report due: November 10, 2014 (via email to the instructor)

In-class project presentation: December 1, 2014

Final report due: December 5, 2014 (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 3 2014.

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
25 Aug	Introduction, Equations of motion	Ch. 1, Ch. 2: sections 2.1 thru 2.2	1	
1 Sep	No class - Labor day			
8 Sep	Human factors, Geometric Design	Ch. 2: sections 2.3 thru 2.4	2	1
15 Sep	Geometric Design, Traffic Flow Theory	Ch. 2: section 2.4, Ch. 3: sections 3.1 thru 3.3		
22 Sep	Traffic Flow Theory & Probability	Ch. 3: section 3.4, Ch. 13: sections 13.1 and 13.2	3	2
29 Sep	Traffic Flow Theory & Statistics	Ch. 13: sections 13.3 and 13.4, Ch. 3: section 3.5		3*
6 Oct	Mid-term Exam		4	
13 Oct	Traffic Flow Theory & Capacity Analysis	Ch. 3: section 3.6, Ch. 4: sections 4.3 thru 4.5		
20 Oct	Capacity Analysis	Ch. 4: sections 4.5 thru 4.8	5	4
27 Oct	Transportation planning	Ch. 7		
3 Nov	Travel demand forecasting	Ch. 8: sections 8.1 thru 8.4	6	5
10 Nov	Travel demand forecasting	Ch. 8: sections 8.5 thru 8.7		
17 Nov	Transportation impacts and evaluation and choice	Ch. 9, Ch. 10 and Ch. 11	7	6
24 Nov	Advanced Topics: Network flows, Wardrop Equilibrium			
1 Dec	Class project presentations			7
TBD	Final exam			