USC Department of Civil and Environmental Engineering

CE 599: Special Topics

TRANSPORTATION PLANNING AND ENGINEERING

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Spring, 2020: Thursdays 6:00 PM to 9:20 PM
Office Hours: Part time lecturer's office, KAP
After class & by appointment before class.

Description:

This class is not an introductory course on transportation planning and engineering. This class will focus on the concepts of transportation planning, urban travel characteristics, basics of travel demand modeling, transportation system management, traffic engineering, traffic operations and applications and concepts of intelligent transportation systems. The class will provide hands on experience in conducting a transportation study focusing on planning, design and operations and teach the concepts of levels of services for both auto and non-auto modes and emphasize the importance of transportation planning and engineering in an urban area.

Skills Required:

The students are expected to have and undergraduate engineering background, including facility with algebra and statistics. Students are also expected to have knowledge about Microsoft Excel and using a scientific or financial calculator.

Software:

The class includes teaching the basics of "Synchro," a macroscopic planning and analysis software that is widely used by transportation planners and traffic engineers worldwide. Students are required to use this software as part of the final project. The service is being offered by USC's Viterbi School of Engineering via Remote Desktop portal. More instructions will follow during the class.

Learning Objectives and Outcomes:

- This course will help the students to learn the concepts of transportation planning and traffic engineering with practical experience that is followed in the industry.
- The group task will help them understand the science behind the practical application of 4-step transportation planning process.

- The homework/assignments/class project will include the real world examples/situations to solve the problems than the mundane textbook examples. In addition, students will learn the basic concepts of Level of Service (LOS) and be able to use this in their future career.
- The software "Synchro" will help the students to gain in-depth knowledge about roadway/intersection operation along with traffic signal timing/phasing.
- At the end of the course, students will be confident to get into the professional world of transportation planning and traffic engineering to start their entry level career and have basic knowledge to take the Professional Engineer License State Exam.

Points and Grades:

Points will be distributed as shown below:

Task	Points
Individual Homework/Assignment	200
Group Task	150
Midterm Exam	200
Final Exam	200
Class Participation & Attendance	100
Class Project (75 - Project Report, 50 - Presentation, 25 - Cross Rating of Team Members)	150
Total	**1,000**

Grades will be determined as shown below:

Score Range	Grades
940 to 1,000	A
900 to 939	A-
870 to 899	B+
840 to 869	B
800 to 839	B-
770 to 799	C+
740 to 769	C
700 to 739	C-
<700	Please drop the class!!

Individual Homework/Assignment:

The due dates of the assignments are indicated on the syllabus and are expected to be turned in by 6:00 PM on the due dates via Blackboard or email. Late submissions are not entertained and would result in grade reduction, exceptions are only granted in case of illness or any emergencies (written documentation).

Group Task:

Students are expected to complete this group task by making a field visit and collect the data, analyze and submit with a brief report along with an in-class presentation. Ideally, the group shall comprise of 3 to 4 students and are expected to work together in a team/group environment. Students are expected to do their own research including but not limited to online search, in-person contact with agencies/jurisdiction to obtain relevant data and or documents pertaining to the project. Details of the group task will be discussed in detail during the class.

Class Project:

Students are expected to complete the class project by the end of the semester. Ideally, the group shall comprise of 3 to 4 students and are expected to work together in a team/group environment. Students are expected to do their own research including but not limited to online search, in-person contact with agencies/jurisdiction to obtain relevant data and or documents pertaining to the project. Details of the project will be discussed in detail during the class.

OVERVIEW OF COURSE TOPICS

Class	Topics to be Covered	Deliverables/Due Dates
Week 1	Introduction to Transportation Planning Concepts and Transportation System Characteristics	
Week 2	Urban Travel Characteristics, Decision Making and Data Management, Level of Service Calculations	Homework 1 will be assigned
Week 3	Transportation Modeling - Basic Concepts and Application, Class Discussion for Group Task 1	Group Task 1 will be assigned, Homework 1 Due
Week 4	Transportation Facilities for Interrupted and Uninterrupted Flow	Homework 2 will be assigned
Week 5	Introduction to Concepts of Traffic Engineering	Homework 2 Due
Week 6	Geometric Design and Traffic Control	Homework 3 will be assigned
Week 7	Transportation from a Multi-Modal Perspective	Group Task 1 Due
Week 8	**Mid Term**	Homework 3 Due
Week 9	Transportation System Management, Parking Management and Intelligent Transportation Systems	Class Project will be assigned
Week 10	Transportation Safety, Site Planning, Traffic Impacts and Mitigation	
Week 11	**Spring break - No Classes**	
Week 12	Synchro Software Introduction and Training	Homework 4 will be assigned
Week 13	Synchro Software Training and Application	Homework 4 Due
Week 14	Field Visit	Class Project Progress Due
Week 15	Integrating Freight into Transportation, Big Data and the Future of Transportation	
Week 16	**Class Project Presentation**	Class Project Report Due
Week 17	**Final Exam (May 7)**	

STATEMENT ON ACADEMIC CONDUCT AND SUPPORT SYSTEMS

Academic Conduct:

Plagiarism – presenting someone else's ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in SCampus in Part B, Section 11, "Behavior Violating University Standards" policy.usc.edu/scampus-part-b. Other forms of academic dishonesty are equally unacceptable. See additional information in SCampus and university policies on scientific misconduct, http://policy.usc.edu/scientific-misconduct.

Support Systems:

Student Counseling Services (SCS) – (213) 740-7711 – 24/7 on call
Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention. engemannshc.usc.edu/counseling

National Suicide Prevention Lifeline – 1 (800) 273-8255
Provides free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week. www.suicidepreventionlifeline.org

Relationship and Sexual Violence Prevention Services (RSVP) – (213) 740-4900 – 24/7 on call
Free and confidential therapy services, workshops, and training for situations related to gender-based harm. engemannshc.usc.edu/rsvp

Sexual Assault Resource Center
For more information about how to get help or help a survivor, rights, reporting options, and additional resources, visit the website: sarc.usc.edu

Office of Equity and Diversity (OED)/Title IX Compliance – (213) 740-5086
Works with faculty, staff, visitors, applicants, and students around issues of protected class. equity.usc.edu

Bias Assessment Response and Support
Incidents of bias, hate crimes and microaggressions need to be reported allowing for appropriate investigation and response. studentaffairs.usc.edu/bias-assessment-response-support

The Office of Disability Services and Programs
Provides certification for students with disabilities and helps arrange relevant accommodations. dsp.usc.edu

Student Support and Advocacy – (213) 821-4710
Assists students and families in resolving complex issues adversely affecting their success as a student EX: personal, financial, and academic. studentaffairs.usc.edu/ssa

Diversity at USC
Information on events, programs and training, the Diversity Task Force (including representatives for each school), chronology, participation, and various resources for students. diversity.usc.edu

USC Emergency Information
Provides safety and other updates, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible. emergency.usc.edu

USC Department of Public Safety – UPC: (213) 740-4321 – HSC: (323) 442-1000 – 24-hour emergency or to report a crime.
Provides overall safety to USC community. dps.usc.edu