CE397: REGIONAL TRANSPORTATION PLANNING: APPLICATION METHODS
Spring 2015
Lecture: 12:30-2 pm, Wednesday/Friday 7.202 ECJ

I. Office Hours for Dr. Kara Kockelman
Mondays 2:00-4:00 pm & Wednesdays 3:15-4:30 pm, 6.904 ECJ
Or, by appointment: 471-0210 (Office phone number) & kkockelm@mail.utexas.edu

II. Prerequisites
Graduate students are not required to have satisfied any specific courses as prerequisites for this course. However, undergraduates and graduate students outside the transportation engineering major should receive permission from the instructor before enrolling in this course.

III. Grading
For purposes of grading, the performance of students enrolled in this course will be assessed using the following scoring system:

Homeworks	35% of score/grade
Course Project	25% (20% for report + 5% for presentation)
Examination(s)	30%

IV. Examinations[*]
Only one course examination (a significant "midterm") is expected, towards the end of the semester (Friday, April XX), and this may take place outside of lecture hours (e.g., as a take-home exam). The UT-scheduled final examination slot (Weds., May XX, from X to X pm) may be used for student oral presentations of final-project work, if times during the final week of class do not work well.

[*] The instructor reserves the right to periodically administer, grade, and use in student evaluation "pop"/unannounced *quizzes*. Students should come to class prepared to contribute to each class's lecture and discussion by staying up-to-date with homeworks and reading.

Make-up exams will *not* generally be given to any student. If a student is absent from a scheduled exam due to medical or other problems beyond her/his control and can plainly demonstrate this, the instructor can choose to give the student a completely different exam, additional assignments, and/or change the weighting of the student's various graded contributions.

V. Homework Assignments
Homework problems will be assigned roughly every two weeks and must be handed in at the *beginning* of the period in which they are due. After this time, they will be considered late and given *no credit*. However, **all** assigned problems **must** be completed (within 3 weeks of their due date and at least one week before the final exam) or a student's participation score will be adversely affected.

VI. Course Project
The course project is a two-person team endeavor for students to apply travel demand forecasting models at the regional scale for the Austin, Texas or Tyler, Texas zone systems and networks. Teammates will learn and apply TransCAD software with feedback of travel times and costs for multiple system equilibria. They will specify, model, and compare results of at least 3 different scenarios. These scenarios may involve transportation system modifications (e.g., new transit services or added highway

links), travel demand management practices (e.g., new road tolls, higher speed limits, and/or congestion pricing), changing land use patterns (e.g., more balanced job-household settings, infill development, transit-oriented design, and urban growth boundaries), and/or changing demographics (e.g., added user classes with shifting values of time, different population and job growth-rate scenarios, and greater preference for shared fleets). Such work will be followed by an oral presentation to the class (of roughly 15 minutes per team, plus 5 minutes for questions & answers).

VII. Texts and Course Notes
The recommended textbook for this course is Ortúzar and Willumsen's *Modelling Transport*. Chapters of that text will be assigned for reading, along with sections of NCHRP reports 716 and 365 (available at http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_716.pdf and http://ntl.bts.gov/lib/21000/21500/21563/PB99126724.pdf) and the SHRP2 C46 Primer on activity-based travel demand models (http://onlinepubs.trb.org/onlinepubs/shrp2/SHRP2_C46.pdf). Copies of assigned book chapters will be available via a Course Packet for purchase from **Canopy Course Notes**, 512-497-6662.
Updated versions of lecture notes will posted periodically online, for students to download. Any additional, required materials will be made available.

VIII. Add/Drop Dates
From the 1st through the 12th class day, an undergraduate student can drop a course via the web and receive a refund, if eligible. From the 13th through the university's academic drop deadline, a student may Q drop a course with approval from the Dean, and departmental advisor. After the academic drop deadline has passed, a student may drop a course only with Dean's approval, and only for urgent, substantiated, non-academic reasons.

For graduate students: From the 1st through the 4th class day, graduate students can drop a course via the web and receive a refund. During the 5th through 12th class day, graduate students must initiate drops in the department that offers the course and receive a refund. After the 12th class day, no refund is given. No class can be added after the 12th class day. From the 13th through the 20th class day, an automatic Q is assigned with approval from the Graduate Advisor and the Graduate Dean. From the 21st class day through the last class day, graduate students can drop a class with permission from the instructor, Graduate Advisor, and the Graduate Dean. Students with 20-hr/week GRA/TA appointment or a fellowship may not drop below 9 hours.

IX. Evaluation Plan
UT's Course/Instructor Survey form will be used as the basic evaluation tool. All students are encouraged to submit written comments during this survey. Other formal assessment opportunities are likely to arise mid-semester; and students are strongly encouraged to provide feedback at any time during the course, in person, via other students or anonymously, to the TA and/or the instructor.

X. Other Information
1. The University of Texas at Austin provides, upon request, appropriate academic accommodations for qualified students with disabilities.   For more information, contact the Division of Diversity and Community Engagement, Services for Students with Disabilities, 471-6259 (voice) or 232-2937 (video phone) or http://www.utexas.edu/diversity/ddce/ssd.
2. According to *The General Information Catalog* "a student who is absent from a class or examination for the observance of a religious holy day may complete the work missed within a reasonable time after the absence, if *proper notice* of the planned absence has been given". The deadline for proper notification of such an absence is the fifteenth day of the semester.

3. Students in this course are encouraged and authorized to work on homework assignments together and prepare for exams together. However, all written work handed in by a student is considered to be his/her own work, prepared without *unauthorized* assistance. To ensure your actions never compromise your and our class's integrity, please visit http://deanofstudents.utexas.edu/sjs/acint_student.php. Students who violate University rules on scholastic dishonesty (*e.g.*, anything which gives unfair academic advantage to a student) are subject to disciplinary penalties, including the possibility of failure in the course and/or dismissal from the University. Since such dishonesty harms the individual, all students, and the integrity of the University, policies on scholastic dishonesty will be strictly enforced. An "F" grade will be the recommended penalty in most cases of scholastic dishonesty. One should refer to the Student Judicial Services website at http://deanofstudents.utexas.edu/sjs to access the official University policies and procedures on scholastic dishonesty as well as further elaboration on what constitutes scholastic dishonesty. For further elaboration on what constitutes scholastic dishonesty see http://deanofstudents.utexas.edu/sjs/scholdis_whatis.php

XI. Course Objectives, Academic/Learning Goals, Content, & Schedule

This course covers various aspects of transportation system performance forecasting. By the end of this course, students should have a solid understanding of the theory and methods underlying the practice of urban and regional travel demand modeling and should be able to:

- describe Americans' evolving travel choices, and their variations as a function of demographics and land use patterns;
- identify key data sources and methods for planning activities, including model specification, forecasting and validation, for personal vs. commercial travel;
- define and apply key elements of different modeling paradigms for aggregate and disaggregate approaches to city-wide and region-wide transportation system performance forecasts;
- apply travel demand modeling software for system-wide forecasts of activity participation rates, destination and mode choices, traffic and travel time & cost outcomes; and
- evaluate the differences in distinctive land use-transportation scenarios, including changes in travelers' net benefits.

To attain these objectives, we will systematically proceed through a series of topic modules in class, and students will undertake multiple homework assignments and a team-base course project. A tentative scheduling of the course topics is shown here.

Course Motivation

1. **Introduction to Course + Trends in U.S. Travel Choices** (2 lectures)
2. **Trends in Transportation Technologies** (1 lecture)
3. **Trends in U.S. Land Use Patterns** (1 to 2 lectures)
4. **Transportation's Costs & Benefits** (1 to 2 lectures)
5. **The Regulatory Environment** (1 lecture)

Useful Data Sets for Regional Transportation Planning Applications

6. **Land Use Data Sets** (1 lecture)
7. **Travel Data Sets** (2 lectures)
8. **Network Details** (1 lecture or less)

Model Applications

9. **Travel Choice Modeling Frameworks** (1 to 2 lectures)
10. **Trip Generation & Attraction Models** (1 to 2 lectures)
11. **Trip-Distribution Models** (2 to 3 lectures)
12. **Mode Choices** (2 lectures)
13. **Time of Day Choices**
14. **Network Assignment of Traffic** (2 to 3 lectures)
15. **Activity-based Methods** (2 lectures)
16. **Models for Freight Movements** (2 lectures)
17. **Long-distance Travel Choices** (1 lecture)
18. **An Introduction to Land Use Modeling** *(if time permits)*