The University of Texas at Austin   Prof. Chandra R. Bhat

Dept. of Civil, Architectural & Environmental Engineering   ECJ 6.810 / 471-4535

CE 391J - Transportation Planning: Methodology and Techniques
Fall 2011: Tuesdays and Thursdays, 3:30-5:00pm

Course Description

This course introduces the student to transportation planning and provides the student with an understanding of transportation planning models, including travel demand models of trip generation, trip distribution, mode choice, and traffic assignment. The course also provides instruction in econometric model estimation methods and use of behavioral models in service design, marketing and prediction. Practical problems are assigned to provide familiarity with models used and experience in data handling and estimation.

Reading

There is no text for the course. Students are required to purchase a course packet available at a local copy shop.

Pre-requisites

Familiarity with matrix algebra, statistical estimation and hypothesis testing, and basic differential calculus.

Format

Classes will be a combination of lecture and discussion. Students are expected to participate actively in class discussions. Homework assignments will be given, and analysis of these assignments will be the basis for some class discussion.

Meeting Time and Location: 3:30-5:00 p.m., Tuesdays and Thursdays in ECJ 7.208.

Office Hours: 2:00-3:30 p.m., Mondays in ECJ 6.810.

Grading

There will be **no exams** in this course. Grades will be based on homework assignments (85%) and class participation (15%). Students are expected to work independently on the homework assignments. Homework assignments will be due at the beginning of the class period on the date specified. No assignments will be accepted after the due date, except in very exceptional circumstances.

Student Evaluation of Teaching

Students will evaluate teaching in the course on November 29th. The first 15-20 minutes of this class period will be reserved for the evaluation.

Web Site

The web site for the course is http://courses.utexas.edu. Once you get to this site, log in with your UT EID and password and select CE391J from the list of courses. The web site will include the course syllabus, course calendar, data sets to be used in the assignments, the SPSS software, and several miscellaneous notes/links.

Course calendar

See "Calendar of Course Events" at the web site or the course packet. Note that an additional class period will be held on September 12th (Monday), September 19th (Monday), September 26th (Monday), October 7th (Friday), and November 21st (Monday) between 3:30-5:00 p.m. If these dates and/or time are not convenient to one or more students, other dates and/or times will be explored. No classes will be held on October 4th, October 20th, November 10th, November 15th, and November 17th. The front-end "loading" of the course is being done for two reasons. First, much background material will need to be covered in the beginning and additional classes early on will get us over this background "hump" early in the semester. Second, it will ensure a more uniformly-spaced distribution of the assignments.

Other General Information

Letter grades are used to record the instructor's evaluation of students' performance in a course. The following grades are used: *A*, *A–*, *B+*, *B*, *B–*, *C+*, *C*, *C–*, *D+*, *D*, *D–*, and *F*. To receive credit for a course, an undergraduate student must earn a grade of at least *D–*. To include a course in the Program of Work for a graduate degree, a graduate student must earn a grade of at least *C*.

School of Engineering Drop Policy: 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.

Students with Disabilities: 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),
http://www.utexas.edu/diversity/ddce/ssd

Web-Based Class Sites: Web-based, password-protected class sites will be associated with all academic courses taught at the University. Syllabi, handouts, assignments and other resources are types of information that may be available within these sites. Site activities could include exchanging e-mail, engaging in class discussions and chats, and exchanging files. In addition, electronic class rosters will be a component of the sites. Students who do not want their names included in these electronic class rosters must restrict their directory information in the Office of the Registrar, Main Building, Room 1. For information on restricting directory information, see the General Information Catalog: http://registrar.utexas.edu/catalogs/gi10-11/.

Academic Integrity: Students who violate University rules on scholastic dishonesty 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. For further information, visit the Student Judicial Services web site http://deanofstudents.utexas.edu/sjs/, and the General Information Catalog: http://registrar.utexas.edu/catalogs/gi10-11/.

Anticipated Homework Assignments

1. **Demand-Supply Equilibration and Urban Transportation Modeling System (UTMS)**
   Distribution: Sep. 13   Submission: Sep. 22   Return: Sep. 26

2. **SPSS Familiarization and Data Exploration**
   Distribution: Sep. 26   Submission: Oct. 6   Return: Oct. 11

3. **Estimation of Trip Generation Models: Basic Issues**
   Distribution: Oct. 6   Submission: Oct. 13   Return: Oct. 18

4. **Estimation of Trip Generation Models: Advanced Models**
   Distribution: Oct. 18   Submission: Oct. 27   Return: Nov. 1

5. **Trip Distribution Models**
   Distribution: Nov. 1   Submission: Nov. 15   Return: Nov. 22

6. **Estimation of Mode Split Models**
   Distribution: Nov. 22   Submission: Nov. 29   Return: Dec. 6

Course Outline

Topic	Reading Assignment (see Refs. for abbreviations)
1. Introduction and Overview (2 classes)	OW, Chapter 1; DM, Chapter 1
2. Travel Demand Theory (3 classes)	OS, Chapter 2
3. Urban Transportation Model System (2 classes)	DM, Chapter 2; OW, Chapter 1, section 1.5
4. Estimation Methods (5 classes)	BL, Chapter 2; PR, Chapter 2 and Appendix 4.3; CN1 and CN2
5. Data Collection Issues (1 class)	OW, Chapter 3
6. Trip Generation (5 classes)	OW, Chapter 4; KD Paper; PR, Chapter 5
7. Trip Distribution (4 classes)	CN3
8. Mode Split (3 classes)	OW, Chapter 6 (sections 1-5) FHWA, Chapter 5
9. Traffic Assignment and Direct Demand Models (2 classes)	OW, Chapter 6 (section 6)
10. Summary and Review (1 class)	-

References

OW	-	Ortuzar and Willumsen, Modeling Transport
BL	-	Ben-Akiva and Lerman, Discrete Choice Analysis
DM	-	Domenich and McFadden, Urban Travel Demand.
OS	-	Oi and Shuldiner, An Analysis of Urban Travel Demand.
CN1	-	Class Notes 1: Estimation - General and Linear Regression
CN2	-	Class Notes 2: An Introduction to SPSS for Windows
CN3	-	Class Notes 3: Trip Distribution
KD	-	Paper by Kassoff and Deutschman
FHWA	-	Report by Federal Highway Department
PR	-	Pindyck and Rubinfeld, Econometric Models and Economic Forecasts