Department of Civil & Environmental Engineering
Room 200, Engineering
www.cee.pdx.edu
503-725-4282

Course Number	CE 351 Fall Quarter 2007
Title	Transportation Systems: Planning and Design
Section	001
CRN(s)	
Credits	4
Prerequisite(s)	Junior standing
Days/Time	Tuesdays and Thursdays 2:00-3:50
Location	Engineering Building 103
Final Exam Day/Time	Monday, December 3, 2007, 1000-1150

Course Website	There is NO website. The class schedule is tentative. Class announcements will be used for updates and to announce changes. Email will be also used. It is important that you check your engineering email account frequently.

Instructor	Dr. Miguel A. Figliozzi
Office	301D Engineering Building
Phone & Voicemail	503-725-2836
E-mail	figliozzi@pdx.edu
Office Hours	Tuesdays and Thursdays 3:50-4:50
Mailbox Location	CEE Office, Engineering Building Room 200

Required Text:
Mannering, Fred L. and Kilareski, Walter P. *Principles of Highway Engineering and Traffic Analysis*, 3rd ed., 2004.

Recommended References/Optional Text/Supplemental Readings & Resources:

1. Khisty, C. Jotin and Lall, B. Kent, *Introduction to Transportation Engineering*, 2002.
2. *Highway Capacity Manual 2000*, Transportation Research Board, 2000. See Highway http://www.ahb40.org for more information.
3. *A Policy on Geometric Design of Highways and Streets*, American Association of State Highway and Transportation Officials (AASHTO Green Book), 2001.
4. *Highway Design Manual,* Oregon Department of Transportation, 2003 http://www.odot.state.or.us/tsroadway/2003-english-hdm.htm
5. *Mechanistic-Empirical Pavement Design Guide* National Cooperative Highway Research Program (NCHRP) http://www.trb.org/mepdg/guide.htm

Catalog Course Description

Urban street patterns and transportation demand, highway capacity analysis, process of urban transport planning, travel-demand forecasting and its application to traffic studies. Development of transport models, multiple regression analysis, models of land use and trip generations, stochastic trip distribution models, applications and case studies. Route assignment analysis and traffic flow theory.

Course Statement

This course is an introduction to the principles of transportation engineering with a focus on highway engineering and traffic analysis. Topics include vehicle fundamentals, geometric design, pavement design, and traffic control. The material learned will allow students to solve transportation problems that are likely to appear in professional practice and on the Fundamentals of Engineering exam (FE) and Principles and Practice of Engineering Exam (PE).

Course Objectives – Students must demonstrate the ability to:

1. Understand highway users fundamentals and their impact on geometric and pavement design
2. Understand traffic flow and intersection operations and analysis.
3. Perform individual and group work
4. Design experiments and interpret data
5. Communicate and present ideas/work to colleagues and instructor.

Course Evaluation

The course grade will be determined with the following weight for class assignments:

Assignment	Percent of Total Grade
Homework	20%
Mid-term	20%
Group Report & Presentation	25%
Final Exam	35%

A grade of incomplete "I" is granted by the instructor *only* with prior approval and consent. Criteria are outlined in the PSU Bulletin. Note that for Civil Engineering Undergraduates the CEE Department requires that junior and senior engineering courses must be completed with a minimum grade of C-, and a student's cumulative PSU GPA must be 2.25 or higher to graduate from the BSCE program.

Professionalism

All assignments and class participation should be conducted in a professional manner. Attention to detail on class assignments and communication is important and is part of the learning experience and it will be included in part of student evaluation.

Attendance

Attendance is strongly suggested but not enforced. If you do not have to class it is your responsibility to contact classmates or the lecturer.

Late Work

Late work is not accepted. If you submit late you lose your points. The due date for each assignment is clearly indicated and the work must be turned in at the start of class when requested by the instructor unless indicated otherwise. Exceptions can only be granted in the most extenuating circumstances. Please don't ask for exceptions unless you think they agree with the above statement.

Description of Assignments

Problem sets and Report will be given in class.

Computer and E-mail Accounts
Email is a useful way for us to remain in contact and is the best way to reach me. I will periodically send reminders, hints, and other notices to the class via email. I ask that you include **CE351 and topic of your message in the subject line (be as specific as possible)** when sending me an email. Use proper grammar, spell check, and proof your message. You may be required to submit some of your assignments electronically. Expect a maximum response time of 2 days (plan accordingly).

All engineering students should activate their engineering computer account which will allow them to use engineering computer labs and e-mail. You should activate it *before* the day you need it. If you encounter problems with this account, see the lab attendant, or e-mail: support@cecs.pdx.edu. Please note: the CEE Department regularly sends course announcements, job information, etc. to students' CECS accounts, so if you do not check it regularly, I recommend forwarding your CECS e-mail to whatever e-mail address you use.

Ethics and Professionalism
As future professional engineers you should plan to take the Fundamentals of Engineering Exam and after the required experience, the Professional Engineering Exam (see the Oregon State Board of Examiners for Engineering and Land Surveying at www.osbeels.org). You should also be familiar with the ASCE Code of Ethics (www.asce.org/inside/codeofethics.cfm), which includes the following:

Engineers shall act in such a manner as to uphold and enhance the honor, integrity and dignity of the engineering profession.

The PSU Student Conduct Code prohibits all forms of academic cheating, fraud, and dishonesty. Further details can be found in the PSU Bulletin. Allegations of academic dishonesty may be addressed by the instructor, and/or may be referred to the Office of Student Affairs for action. Acts of academic dishonesty may result a failing grade on the exam or assignment for which the dishonesty occurred, disciplinary probation, suspension or dismissal from the University. The students and the instructor will work together to establish optimal conditions for honorable academic work. Questions about academic honesty may be directed to the Office of Student Affairs (www.ess.pdx.edu/osa/).

Resources

Student Groups and Professional Organizations
Participation in student and professional groups can be a valuable part of your education experience. Membership gives students opportunities to get to know fellow students better, meet and network with professionals, collaborate in solving real engineering problems, learn about internship or job possibilities, socialize and have fun. Your fellow students can be a great source of help and guidance in your academic endeavors. Consider becoming active with a student organization, such as the following:

- American Society of Civil Engineers Student Group (ASCE): http://www.asce.pdx.edu
- Students in Transportation Engineering And Planning (STEP): http://www.step.groups.pdx.edu/

Most professional organizations have monthly meetings and encourage student participation by providing discounts for lunch and dinner meetings. These meetings provide opportunities to network with potential future employers, learn about scholarships, and increasing your technical knowledge. Take a look at these organizations as a starting point:

- American Society of Civil Engineers (ASCE) Oregon Section: www.asceor.org
- Institute of Transportation Engineers (ITE) Oregon Section: www.oregonite.org

- Society of Women Engineers (SWE) Columbia River Section - www.swe-columbia-river.org
- Structural Engineers Association of Oregon (SEAO): www.seao.org
- Women's Transportation Seminar, Portland Section: wtsinternational.org

Research and Learning Opportunities
Transportation is a growing and exciting research area at Portland State University. I invite you to review the research in the Intelligent Transportation Systems Laboratory (www.its.pdx.edu/). Also, every Friday during the semester a Transportation Seminar is presented. All are welcome. The schedule is available at www.cts.pdx.edu

Campus Help
As a PSU student, you have numerous resources at your disposal. Please take advantage of them while you are here. A small sample is listed below:
- CEE Website (includes program info, job listings, etc.): www.cee.pdx.edu
- Career Center: www.career.pdx.edu/
- Center for Student Health & Counseling: www.shac.pdx.edu/
- The Writing Center: www.writingcenter.pdx.edu/
- PSU Disability Resource Center: 435 Smith Memorial Union Note: The PSU Disability Resource Center is available to help students with academic accommodations. If you are a student who has need for test-taking, note-taking or other assistance, please visit the DRC and notify the instructor at the beginning of the term.

Library and Literature Research
With the advent of the Internet it is very tempting to think that all necessary resources for a term project will be available in full text after typing in a few words at Google.com. This is not the case. You will often need to go to the library, use real library search tools and access real books and articles contained in refereed/archival journals.

Be sure to make use of the Vikat library catalog. Go to the PSU library home page at www.lib.pdx.edu/. Also available on the library home page are Full Text Electronic Journals: www.lib.pdx.edu/~bvws/bytitle.html, and a list of on-line Databases: www.lib.pdx.edu/resources/databases/databases.html. Also, try EI Compendex (www.ei.org/ev2/ev2.home) and Lexis-Nexis. Note that access to these databases is free for PSU students, but you must be using a computer on campus or via a dial-in service. See www.lib.pdx.edu/services/distance/proxyserver.html for instructions on how to gain off-campus access using a proxy server.

Campus Safety
The University considers student safety paramount. The Campus Public Safety Office is open 24 hours a day to assist with personal safety, crime prevention and security escort services. Call 503-725-4407 for more information. **For Campus emergencies call 503-725-4404**.

Final Notes

- The syllabus is subject to change at the discretion of the instructor as course or other circumstances requires.
- Students with documented disabilities are encouraged to discuss with me arrangements that will enhance their learning in this class.

I thank my colleagues Chris Monsere and Rob Bertini for his suggestions and contributions.

Course Schedule

The schedule is only tentative, opportunities may arise or change during the semester (e.g. guest lecturers, field trips). Classes and topics will be changed as necessary (attend class and check your email frequently to be informed)

#	D	Date	Topic	Readings	Week	Assignment Given	Assignment Due
1	T	25-Sep	Introduction	Chapter 1	1		
2	R	27-Sep	Highway Users	2.1-2.8			
3	T	02-Oct	Highway Users Cont.	2.9	2		
4	R	04-Oct	Geometric Design	3.1-3.3		Problem Set 1	One week later
5	T	09-Oct	Geometric Design - Pavements	3.4-4.1	3		
6	R	11-Oct	Pavements	4.2-4.4		Problem Set 2	One week later
7	T	16-Oct	Speed Data Collection and Analysis - Project	4.6	4	Project	
8	R	18-Oct	Mid Term Review				
9	T	23-Oct	MID TERM EXAM				
10	R	25-Oct	Traffic Concepts	5.1-5.3			Project Proposal
11	T	30-Oct	Queuing Theory	5.4 -5.6	6		
12	R	01-Nov	Queuing Theory - Signalized Intersections	7.1 7.3		Problem Set 3	One week later
13	T	06-Nov	CLASS CANCELLED		7		
14	R	08-Nov	Signal Phasing and Timing Plans - LOS	7.3-7.5		Problem Set 4	Nov. 20
15	T	13-Nov	LOS Intersections - Highway LOS	7.6 -6.1-6.3	8		
16	R	15-Nov	Highway LOS Factors – Travel Time Reliability	6.1-6.2			
17	T	20-Nov	Intersection Warrants - Speed Zoning	Guest Lecturer	9		
18	R	22-Nov	Thanksgiving - No class				
19	T	27-Nov	Traffic Impact Analysis	Guest Lecturer	10		Project Report Due
20	R	29-Nov	Project Presentations				Project Presentations
21	M	03-Dec	Comprehensive Final Exam: MONDAY, December 3 1000-1150, Room EB 103				