

Winter 2005

Course Number	CE 456/556
Title	Traffic Engineering
Section	001
CRN(s)	40416/40428
Credits	4
Design Credits	3
Prerequisite(s)	CE 454
Days/Time	TR 16:00-17:50
Location	SB II 148
Final Exam Day/Time	Tue March 15, 2005/15:30-17:20

Course Website

Instructor	B. Kent Lall
Office	SB II 434
Phone	503 725 4245
E-mail	kent@cecs.pdx.edu
Office Hours	TR 14:00-15:00
Mailbox Location	CEE Office, Science Building 2, Room 128

Required Text or Other Materials:

Traffic Engineering, Roger Roess, Elena Prassas & William McShane, Prentice Hall, 2004

Recommended References/Optional Text/Supplemental Readings & Resources:

Highway Capacity Manual, TRB, 2000

A Policy On Geometric Design of Highways and Streets, AASHTO, 2004

FHWA, BTS, NHTSA web sites

Catalog Course Description:

Traffic system components, traffic stream characteristics, traffic studies and data collection, volume studies, speed, travel-time, delay and pedestrian studies, capacity analysis, freeways, weaving sections, ramp junctions, rural highways, signalized and unsignalized intersections, signal coordination, arterial operations and access management.

Design/Professional:

75 % design. Ethics and societal context of traffic engineering solutions emphasized.

Course Objectives – Students must demonstrate the ability to:

1. to apply *knowledge of mathematics, science, and engineering*
2. to *design and conduct experiments*, as well as to *analyze and interpret data*
3. to *design a system, component, or process to meet desired needs*
4. to *identify, formulate, and solve engineering problems*
5. to *understand the impact of engineering solutions in a global and societal context*

Course Requirements:

Course Grading

Assignment	Points Assigned or % of Total Grade
Homework	10
Midterm I	30
Midterm II	30
Final Examination	30

Incompletes: A grade of "I" is granted by the instructor *only* with prior approval and consent. Criteria are outlined in the PSU Bulletin. **Program requirements:** {for UG courses} 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.

Course Schedule

Week of	Topic	Reading Assignment	Homework Assignment	HW Due Date
01/03	Elements of traffic engineering, system & profession, ethics & legislation, road user & vehicle characteristics	p: 1-37	Ch 2: 1,2,4,5 Ch 4: 5	01/11
01/10	Roadway geometric characteristics, cross section elements, horizontal & vertical curves	p: 31-70	Ch 3: 4,5,6,8	01/18
01/17	Traffic control devices, markings, signs, signals, communication with road user, traffic stream flow	p: 71-119	Ch 4: 4,6 Ch 5: 1,3,8,10	01/25
01/24	ITS, traffic studies, statistical applications, distributions, hypothesis testing	p: 120-158 p: 203-214	Ch 7: 1,2,3 Ch 9: 1	02/01
01/31	Volume studies, field techniques, intersection & network studies, counting program	p: 159-175 p: 214-221	Ch 8: 1 Ch 9: 2	02/08
02/07	Speed, travel & delay studies, accident statistics & safety program, parking	p: 176-200	Ch 8: 3,4,5,7 Ch 9: Chi square	02/15
02/14	Capacity & level of service for freeways, multilane highways, methodology, composite grades	p: 236-261 p: 263-282	Ch 10: 1,2,3 Ch 11: 1,2,3	02/22
02/21	Weaving, merging & diverging on freeways & multilane highways, level of service	p: 290-328	Ch 12: 1, 3a&b,4,5,9,10	03/01
02/28	Intersection control, basic principles, warrants for traffic signal control	p: 335-350, 360-384 p: 445-485	Ch 13: 2,5 Ch 16: 1	03/08
03/07	Signal timing, actuated signals			
03/14	Final examination			

Computer and E-mail Accounts

All engineering students should activate their engineering computer account (go to the CadLab in SB2, 169) 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, we 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 FE Exam (see the Oregon State Board of Examiners for Engineering and Land Surveying at www.osbeels.org), and you should 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 in 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 (<http://www.ess.pdx.edu/osa/>).

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>
- Institute of Transportation Engineers Student Chapter (ITE): <http://www.its.pdx.edu/ite/>

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 - <http://www.swe-columbia-river.org>
- Structural Engineers Association of Oregon (SEAO): www.seao.org

Resources

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:

- CE Website (includes program info, job listings, etc.): <http://www.cee.pdx.edu/>
- Career Center: <http://www.career.pdx.edu/>

- Center for Student Health & Counseling: <http://www.shac.pdx.edu/>
- The Writing Center: <http://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.

Introduction to 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 <http://www.lib.pdx.edu/>. Also available on the library home page are Full Text Electronic Journals: <http://www.lib.pdx.edu/~bvws/bytitle.html>, and a list of on-line Databases: <http://www.lib.pdx.edu/resources/databases/databases.html>. Try EI Compendex (<http://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 <http://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.