

CALIFORNIA POLYTECHNIC STATE UNIVERSITY
Civil and Environmental Engineering



CE 421 - Traffic Engineering

Fall 2005

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Course Objectives: To learn the concepts and techniques of traffic engineering at a level where participants will be able to design and operate systems to accommodate and control traffic, and play lead roles in implementing emerging traffic management concepts. Although the course emphasizes road traffic, especially urban roadways, many concepts and methods also apply to other modes (pedestrians, bikes, public transit, aircraft...)

Topics:

Introduction

- Chap. 6* Principles of Traffic Flow
- Chap. 3 Physical/Behavioral Characteristics of Drivers, Pedestrians, Vehicles, and Roads
- Chap. 5 Safety Studies and Accident Data
- Chap. 8 Principles of Traffic Control
- EXAM #1
- Chap. 9 Capacity and Level of Service for Uninterrupted Flow Facilities
- Chap. 10 Capacity and Level of Service for Intersections
Access Management
- Chap. 4 Traffic Studies
EXAM #2

Required Text: CE 421 – Traffic Engineering – Lecture Outlines. Cal Poly. El Corral Coursepack

Key Texts (on library reserve or reference collection –needed to complete some assignments):

1. Garber, N.J. and L.A. Hoel. *Traffic and Highway Engineering*. 3rd Edition. Pacific Grove, CA : Brooks/Cole Pub. Co., 2002. (2 hour Reserve) (* chapter references in the above topic list are in this book)
2. Transportation Research Board, *Highway Capacity Manual (HCM)*. Washington DC. 2000. HE336.H48 H54 2000 (Ref.) in both paper and CD-ROM formats.
3. U.S. Federal Highway Administration (FHWA). *Manual on Uniform Traffic Control Devices (MUTCD)*. Millennium Edition, revised. Washington DC. 2001. On-line at: <http://mutcd.fhwa.dot.gov/>

Other Texts (background and optional reading):

1. Homburger, W.S. et al. *Fundamentals of Traffic Engineering*. 15th edition. Univ. of California, Berkeley, Institute of Transportation Studies. Course Notes UCB-ITS-CN-01-1. 2001. (HE369 .H78 2001)
2. Pline James L., ed. *Traffic Engineering Handbook*, 5th edition. Institute of Transportation Engineers, Prentice-Hall, Englewood Cliffs, NJ., 1999. (HE333 .T68 1999)
3. Edwards, John D., ed. *Transportation Planning Handbook*, 2nd edition. Institute of Transportation Engineers, Prentice-Hall, Englewood Cliffs, NJ., 1999. (HE152.5 .T73 1999)
4. California Department of Transportation. Caltrans *Traffic Manual*. Sacramento CA. (Periodically updated.) On-line at: <http://svhqsg14.dot.ca.gov/hq/traffops/signtech/signdel/trafficmanual.htm>
5. McShane, W.R. and R.R. Roess. *Traffic Engineering*, 2nd Edition, Prentice-Hall, Englewood Cliffs, NJ., 1998. (HE355 .M43 1998)
6. May, A.D. *Traffic Flow Fundamentals*, Prentice-Hall, Englewood Cliffs, NJ., 1990. (HE336.T7 M39 1990)

Student Evaluation (Note: Assignments not handed in on day due will be penalized 10% for each week or partial week they are late):

20 points - Homework assignments

15 points - Exam #1

45 points - Lab reports

20 points - Exam #2

Lab Reports: Students will be assigned lab reports individually or in teams. Each report should be logically organized with a clear statement of the problem situation and study objectives; a description of the pertinent theory and methodology; a presentation of the essential findings; and conclusions, where you also discuss any possible weaknesses in assumptions and approach. Voluminous data that would get in the reader's way should be located in appendices. The University Writing Lab (<http://www.calpoly.edu/~wrtskills/writlab/>) is a resource to help you improve your writing proficiency.