

CE 363 - TRANSPORTATION ENGINEERING AND PAVEMENT DESIGN
Fall 2008 Course Syllabus

Catalog Description: (4) CDT. Basis for planning, design, and operation of transportation facilities. Driver and vehicle performance characteristics, highway geometric and pavement design principles; traffic analysis and transportation planning. Prerequisites: CE 251.

Course Goals: Students should develop a fundamental understanding of transportation engineering and pavement design. Specifically, students should understand the basic concepts and engineering principles of transportation engineering and pavement design. They should be able to apply these concepts and principles to common problems in the design, operation and planning of transportation facilities. The student should also be able to solve problems in transportation and pavements for the Fundamentals of Engineering examination.

Instructor: Dr. Mark Hickman
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Office Hours: Monday 2-5 pm; other times by appointment.

Class Hours: Monday 8:00-9:50 am, Chavez 400
Wednesday and Friday, 8:00-8:50 pm, Harvill 305

Required Textbook: Principles of Highway Engineering and Traffic Analysis, 3rd edition, F. Mannering, W. Kilareski, and S. Washburn; John Wiley and Sons, 2005. ISBN # 0-471-47256-5.

Grading System: 15% homework, 15% design projects, 45% (22.5% each) for two in-class exams, and 25% for a comprehensive final exam.
A = above 90%; B = 80 to 89%; C = 70 to 79%; D = 60 to 69%; E = below 60%.

Homework: There will be weekly homework assignments. Each homework is scored out of 20 points. Homework handed in late will have the following penalties: Up to 1 class late: 5 points; up to 3 classes late: 10 points; more than 3 classes late: no credit.

Working on homework in groups is permitted. However, each person must turn in a separate write-up and solution prepared by his/her own hand. This means that the problem description, steps taken to solve the problem, and any computer input and output must be written by each person individually.

Copying another person's work, *without attribution, including copying of any part or the whole of computer files or material from the Internet*, is considered plagiarism. It will be prosecuted as a violation of the University of Arizona Student Code of Conduct, in accordance with the Code of Academic Integrity. This code is published on-line at <http://w3.arizona.edu/~studpubs/policies/cacaint.htm>. It is the student's responsibility to be familiar with these Codes.

Design Projects: There will be 5 design projects, completed in groups of 3-4 members. The design projects will be the focus of the second class period on Mondays. Each project will culminate in a written report that will be scored out of 50 points, with a two-part grade. The instructor's grade will score 40 points on the written report, and the other group members will score the remaining 10 points on the work of each group member. Consistent with civil engineering practice, the design exercises will receive no credit if they are late.

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D2L: The primary source for homework, solutions, design project activities, and other course materials will be D2L. Students may access D2L through StudentLink or through <http://d2l.arizona.edu/>. It is the students' responsibility to check this site regularly.

Outline:

<u>Topic</u>	<u>Reading in Text</u>
Course introduction	Chapter 1
Physics of vehicles	Chapter 2.1-2.5
Vehicle performance	Chapter 2.6-2.9
Geometric design concepts	Chapter 3.1-3.2
Vertical alignment	Chapter 3.3
Horizontal alignment	Chapter 3.4
Pavement design concepts	Chapter 4.1-4.2
Flexible pavements	Chapter 4.3-4.4
Rigid pavements	Chapter 4.5-4.6
Exam 1, tentatively October 10	
Traffic flow concepts	Chapter 5.1-5.4
Queuing applications in traffic flow	Chapter 5.5-5.6
Capacity and level of service concepts	Chapter 6.1-6.3, 6.7
Capacity and level of service for uninterrupted flow	Chapter 6.4-6.6
Signalized intersection characteristics	Chapter 7.1-7.3
Traffic signal timing	Chapter 7.4-7.6
Exam 2, tentatively November 21	
Forecasting and traffic impact analysis	Chapter 8
Final Exam, 8-10 am, Wednesday, December 17	