CE 463 / 563 TRAFFIC FLOW AND CAPACITY ANALYSIS
Fall 2005 Course Syllabus

Catalog
Methods for the efficient and safe operation of transport facilities through analysis of
Description: capacity, safety, speed, parking, and volume data. 3 credit hours of engineering design.
Prerequisites: CE 363. Graduate-level requirements include a research paper or project.

Course
Provide students with a working knowledge of driver behavior, traffic characteristics,
Objectives: traffic operations, highway capacity and level of service, and operational considerations for design
of traffic facilities. Students should be prepared to work and to take other advanced courses in the
area of traffic engineering.

Instructor: Dr. Mark Hickman
Civil Engineering Building, Room 214B
Phone: 626-9420, E-mail: mhickman@engr.arizona.edu
Office hours: Tuesday and Thursday 10 am – 12 noon; other times by appointment.

Class Hours: Tuesday and Thursday 2:00-3:15 pm, in Education 349


Grading: 25% Homework, 25% total for Quizzes (4), 25% Mid-term Exam, 25% Final Exam
A = above 90%; B = 80 to 89%; C = 70 to 79%; D = 60 to 69%; E = below 60%.
Graduate student projects are worth 20% of the total grade for graduate students, with proportional
adjustments in the percentages above.

Homework:
There will be approximately 8-10 homework assignments; each is worth 20 points toward the total
homework grade. Homework that is 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 of two is permitted. However, each student should submit
homework prepared by his/her own hand. This means that the problem description and any steps
taken to solve the problem must be generated by each student individually. In the case where
computer output is generated jointly (Excel files, other software output, etc.), the group should
submit only one solution, with both group members’ names.

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, on-line at http://w3.arizona.edu/~studpubs/policies/cacaint.htm. It is the
student’s responsibility to be familiar with these Codes.

Desire2Learn: To complement the in-class instruction, and to provide content for the web section, additional
course material, assignments, and other on-line features will be available using Desire2Learn (D2L).
You can access D2L directly from Student Link under the listing for this class. There will be an
introduction to D2L (http://d2l.arizona.edu) during the first week of class.

Within D2L, we will be using the following tools:
• Content modules for each unit within the course (topical list below)
• Assignments
• Threaded discussions and chats on course topics
• On-line self-tests and quizzes to assess understanding of course material

While all students in the web section will be using D2L exclusively, the use of these tools by
students in the lecture-based section is also strongly encouraged.
Graduate students will need to complete an additional project or research paper during the semester. Selection of the project or research topic should be in consultation with the instructor. The following milestones are guidelines for completion of the project:

- September 23: One-page description of project or research subject to instructor
- October 21: One-page progress report to instructor
- November 23: One-page progress report to instructor
- December 6: Final report due to instructor (last day of class)

Again, the project will count as 20% of the semester grade for graduate students.

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**Course Outline**

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<th>Topic</th>
<th>Reading in Text</th>
<th>Web Modules</th>
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<td>What is traffic engineering?</td>
<td>Chapter 1</td>
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<td>Driver behavior and information processing</td>
<td>Chapter 2 and supplemental reading</td>
<td>2, 3, 4</td>
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<td>Traffic control devices</td>
<td>Chapter 4</td>
<td>5, 6</td>
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<td>Traffic studies</td>
<td>Chapters 7, 8 and 9</td>
<td>7, 8, 9</td>
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<td>Uninterrupted traffic characteristics</td>
<td>Chapter 5</td>
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<td>Capacity and LOS of uninterrupted facilities</td>
<td>Chapters 12, 13 and 14</td>
<td>12, 13, 14</td>
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**Mid-term, tentatively Tuesday, October 11 in class (or via proctor for web students)**

<table>
<thead>
<tr>
<th>Topic</th>
<th>Reading in Text</th>
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<td>Interrupted traffic flow characteristics</td>
<td>Chapter 16</td>
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<tr>
<td>Intersection control warrants and design issues</td>
<td>Chapters 16 and 19</td>
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<td>Traffic characteristics at unsignalized intersections</td>
<td>Chapters 19 and 23</td>
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<td>Signal timing and delay</td>
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<td>Capacity and LOS of signalized intersections</td>
<td>Chapters 21 and 22</td>
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<td>Actuated signal control and progression</td>
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<td>Arterial travel times and LOS</td>
<td>Chapters 25 and 26</td>
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<td>Neighborhood traffic control</td>
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**Final Exam: Thursday December 15, 2-4 pm**

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**Additional References**