

**University of Illinois at Chicago  
Department of Civil and Materials Engineering**

**CME 408  
Traffic Engineering and Design**

**Fall 2006**

**Instructor:** Kouros Mohammadian, Ph.D.  
**Office:** 2087 ERF  
**Tel:** 996-9840  
**Email:** kouros@uic.edu

**Catalog Description:**

A course in highway traffic control with an emphasis on highway capacity analysis and traffic signal design.

**Prerequisites:**

An introductory course to transportation engineering (e.g., CME302).

**Course Objectives:**

This course is an overview of the traffic control system design with an emphasis on highway capacity analysis, traffic signals design, and Intelligent Transportation systems (ITS). Students will become familiar with:

- Knowledge and technical expertise in highway traffic operations
- Skills in traffic data collection and analysis
- Engineering techniques and approaches to solve traffic problems
- Engineer's responsibility in providing safe transportation facility

**Lectures:**                      Tuesdays and Thursdays                      1:30-2:45 pm

**Grading System:**

Assignments	15%
Project (traffic impact study) and Presentation	25%
Mid-term Test	25%
Final Exam	<u>35%</u>
TOTAL	100%

No text book is required. Lecture notes and PowerPoint slides will be posted online in blackboard. Additional readings will be assigned or distributed periodically throughout the term

### Recommended and Supplementary References:

- Transportation Research Board, “*Highway Capacity Manual*” (HCM) Metric Units, National Research Council, Edition 2000
- Roger P. Roess, Elena S. Prassas, and William R. McShane “*Traffic Engineering*”, Third Edition, Prentice Hall, 2004
- Fred L. Mannering, Walter P. Kilareski, and Scott Washburn “*Principles of Highway Engineering and Traffic Analysis*”, *Third Edition*, John Wiley & Sons, 2005.
- Federal Highway Administration, *Manual of Uniform Traffic Control Devices* (MUTCD 2000), 2000. <<http://mutcd.fhwa.dot.gov>>
- Illinois Department of Transportation (IDOT), *IDOT Bureau of Operations Traffic Policies and Procedures Manual*. 1992.
- Institute of Transportation Engineers, *Traffic Engineering Handbook*, James L. Pline, Editor. Prentice Hall, 1992.
- The *Highway Capacity Software* User Manual, McTrans, Gainesville, Florida, 2000.

### Tentative Lecture Schedule

The schedule will likely slip as the term progresses. Note that each section may vary from the organization shown here.

- Week 1: Introduction to Traffic Engineering
- Week 2: Human Factors
- Week 3: Traffic Flow Characteristics
- Week 4: Traffic Flow Models
- Week 5: Queuing applications in traffic flow
- Week 6: Shockwave Theory and Applications
- Week 7: Capacity and Level of Service Analysis
- Week 8: Multi-lane Uninterrupted Flow Facilities
- Week 9: Signalized Intersections Analysis
- Week 10: Signalized Intersections Design
- Week 11: Unsignalized Intersections
- Week 12: Traffic Impact Studies
- Week 13: Introduction to Intelligent Transportation Systems
- Week 14: Corridor Management and Intelligent Transportation Systems
- Week 15: Student Project Presentations