Department: Civil  
Number: CE 6314  
Title: Advanced Traffic Engineering

Catalog Description: Human, vehicular, and traffic characteristics as they relate to driver-vehicle-roadway operational systems; traffic studies and methods of analysis and evaluation. Advanced theory and application of traffic control; signalization; and freeway operations.

Prerequisites: CE 4340.


Objectives: The objective of this course is to introduce to graduate students the advanced theories and techniques in traffic engineering as related to freeway operations and management. It is particularly aimed at:

• Familiarizing students with prevailing concepts, theories, and practices of traffic engineering as related to operations and management of urban freeway systems, (1,2)
• Equipping students with the capability to address urban freeway operation issues using appropriate techniques and data, and, (1,2)
• Providing a forum for exchanging ideas and thoughts regarding to freeway operations and management issues. (3,4)

Topics covered
Traffic Flow Theory
- Microscopic Traffic Flow Theory, Macroscopic Traffic Flow Theory
Freeway Flow Control
- Ramp Metering, Ramp Closure, Main-lane Metering
Incident Management
- Incident Detection, work Zone Management, integrated Traffic Control
Congestion Pricing
- System/User Optimal Pricing, HOV/HOT
Traveler Information System
- Pre-trip Information, En-route Information – DMS, HAR, Freeway Travel Time Estimation and Prediction
Traffic Simulation Models
- Model Concepts, model Functionalities (TSIS, DYNASMART)

Class/Laboratory Schedule
Class: MW 7:30-8:50 PM

Contribution of course to meeting the professional component: This course is a major contributor in exposing the students to profession of transportation engineering

Prepared by: Dr. Yi-Chang Chiu
Date: May 12, 2005

Comment [YC1]: This is my thinking. No sure if we need to go with the catalogue or not.