

CEE 771/871: Transportation Operations II

Instructor:	Mecit Cetin, Ph. D.	Office:	KH 137C
Class Time:	TR 4:20– 5:35 pm	Phone:	757-683-6700
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Class Location:	BAL 1003	Email:	mcetin@odu.edu

Prerequisite: CEE470/570, CEE471/571 or instructor's approval

Course Description: CEE 771/871 is designed to teach students the fundamentals of traffic operations, traffic signal control, and traffic flow theory. It focuses on analyses and design of signal timing plans and signal coordination, and traffic data collection and analysis. Traffic engineering software (i.e., Synchro) will be utilized to design timing plans and to analyze signalized intersections. In addition, continuum flow models and microscopic models will be introduced to give students the base knowledge in advanced theories of traffic flow.

Course Objectives: By the end of this course, the students will be able to:

1. Perform capacity and LOS analyses of signalized and unsignalized intersections
2. Design timing plans for both individual traffic signals and coordinated signals
3. Use traffic engineering software to perform various analyses
4. Understand the fundamentals of continuum flow models and microscopic models

Recommended Textbooks: Traffic Engineering, Third Edition, by Roger P. Roess, Elena S. Prassas, and William R. McShane. Prentice Hall.
Traffic Flow Theory: A State-of-the-Art Report, TRB, Available for free download at <http://www.tfhr.gov/its/tff/tft.htm>.

Additional References:

- Highway Capacity Manual 2000, Transportation Research Board.
- Traffic Flow Fundamentals, Adolf May. Prentice Hall, 1990.
- Traffic Theory, Denos C. Gazis, Springer, 2002.
- Fundamentals of Transportation and Traffic Operations, Carlos Daganzo, Pergamon, 1997.

Course Requirements:

Assignments/Exams	
Midterm Exam	30%
Class project	40%
Homework Assignments	25%
Class participation	5%

Spring 2009 Class Schedule (subject to revision)

Date		Topic
Tue	13-Jan	<i>TRB - No Class</i>
Thu	15-Jan	Introduction
Tue	20-Jan	Traffic Stream Characteristics
Thu	22-Jan	Time space diagrams and cumulative plots
Tue	27-Jan	Volume and speed studies
Thu	29-Jan	Introduction to intersection control
Tue	3-Feb	Principles of intersection signalization
Thu	5-Feb	Fundamentals of signal timing and design
Tue	10-Feb	Actuated signal control and detection
Thu	12-Feb	Analysis of signalized intersections
Tue	17-Feb	Synchro Lab
Thu	19-Feb	Synchro Lab
Tue	24-Feb	Synchro Lab
Thu	26-Feb	Analysis of signalized intersections
Tue	3-Mar	Signal coordination
Thu	5-Mar	Signal coordination
Tue	10-Mar	<i>Spring Break</i>
Thu	12-Mar	<i>Spring Break</i>
Tue	17-Mar	Advancements in signal operations
Thu	19-Mar	Analysis of unsignalized intersections
Tue	24-Mar	Analysis of unsignalized intersections
Thu	26-Mar	Guest Lecturer
Tue	31-Mar	Continuum flow models
Thu	2-Apr	LWR Model and Shockwaves
Tue	7-Apr	LWR Model and Shockwaves
Thu	9-Apr	Microscopic models
Tue	14-Apr	Microscopic models
Thu	16-Apr	Exam
Tue	21-Apr	ITS and traffic prediction
Thu	23-Apr	Class Project Presentations
Tue	28-Apr	Class Project Presentations