

SYLLABUS

Course Title and Number: CE 497/597 Special Topics (Traffic Operations)

Times the Course meets during the week: MWF 3:40 P.M. – 4:30 P.M., ET 238

Instructor information: Mandar Khanal, MEC 403F, Phone: 426-1430, email:

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Office hours:

MWF: 10:30 A.M. – 11:30 A.M.,
or at other times by appointment.

Course Description: Principals and practice of traffic operations and control for local streets and highways. PREREQ: CE 370

Objectives / Goals: This course is designed to introduce you to the fundamental concepts and methods of traffic engineering, operations, and control. You will also learn to use two commonly used traffic signal design and simulation software packages.

Course Topics:

TOPIC	DESCRIPTION	CHAPTER(S)
Introduction:	Elements of traffic engineering and emerging issues and trends.	1 – 2
Intersection Control:	Principals of signalization, fundamentals of signal design and timing, analysis of signalized intersections, and actuated signals and detection.	16 – 19
Signal Coordination:	Signal progression, time-space diagrams, bandwidths, effects of signal spacing and cycle length, over-saturated conditions, and signal remedies.	22
Freeway and arterials:	Freeway system congestion, evolution of computer control systems, centralized, distributed control systems, and arterial design and management.	21, 23, & 24
Computer Simulation:	Simulation basics, other issues in traffic simulation, and traffic simulation models.	25
Traffic Studies:	Overview of traffic studies, basic principles of probability and statistics, volume, speed, travel time, and delay studies.	4, 6, and 7

Note: The above is a tentative list. Topics may be added or dropped as needed during the course of the semester.

Course Material: Text: McShane, W.R., R.P. Roess, and E.S. Prassas, “Traffic Engineering Second Edition”, Prentice Hall, Upper Saddle River, New Jersey, 1998

Computer Usage: Use of computers will be required. You will be required to use two traffic engineering software packages: TEAPAC and TSIS.

Design Content: The course will require design of signal systems.

Labs / Projects: Students will need to complete a TEAPAC project. Additionally, CE 597 students will be required to complete one other traffic engineering project of local interest.

Grading: Grades will be based on the following distribution of points:

Homework:	20%
TEAPAC Project:	20%
Other Traffic Engineering Project:	20%
Test:	20%
Final Exam:	20%

For CE 497 students the 20% weight assigned to “Other Traffic Engineering Project” will be divided equally among other remaining items.

Letter grades: Scores ≥ 90 :	A
Scores ≥ 80 & < 90 :	B
Scores ≥ 70 & < 80 :	C
Scores > 55 & < 70 :	D
Scores ≤ 55 :	F

**Homework/project
Guidelines:**

Assignments not submitted as computer output will need to be done on engineering paper. Please do your work neatly.

COURSE SCHEDULE

MONTH	WEEK	DATES	TOPIC	CHAPTERS/SECTIONS
August	1	26/28/30	Introduction/Signals	1 – 2/16 – 19 and 22
September	2	4/6	Signals	16 – 19 and 22
	3	9/11/13	Signals	16 – 19 and 22
	4	16/18/20	Signals	16 – 19 and 22
	5	23/25/27	Signals	16 – 19 and 22
September/ October	6	30/2/4	Freeway Congestion/Arterial Design	21, 23, & 24
October	7	7/9/11	Freeway Congestion/Arterial Design	21, 23, & 24
	8	14/16/18	Freeway Congestion/Arterial Design	21, 23, & 24
	9	21/23 ⁺ /25	Traffic Simulation	25
October/ November	10	28/30 ⁺⁺ /1	Traffic Simulation	25
November	11	4/6/8	Traffic Simulation	25
	12	11/13/15	Traffic Simulation	25
	13	18/20/22	Traffic Studies	4, 6, & 7
	14	25/27	Traffic Studies	4, 6, & 7
December	15	2/4/6 ⁺⁺⁺	Traffic Studies	4, 6, & 7
	16	9/11/13	Review	
December 18, 3:30 PM to 5:30 PM			FINAL EXAM	All of the above

⁺ TEAPAC Project Presentation

⁺⁺TEST

⁺⁺⁺Other Traffic Engineering Project Presentation (CE 597)

Notes:

1. The course schedule is tentative. Revisions may be made during the course of the semester.
2. Topics continue on following days until a new topic is introduced.
3. Homework will be assigned periodically during the semester.