North South University

Department of Civil and Environmental Engineering (CEED)
CEE 350: Traffic Analysis and Design
Summer 2018

Course Syllabus

INSTRUCTORS: Md Shoaib Chowdhury (SbC), Ph.D., P.E., F.ASCE
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CLASS HOURS: **MW 02:40 PM - 04:10 PM (Room # SAC304)**

OFFICE HOURS: MW 04:10 PM – 06:10 PM or by appointment

COURSE DESCRIPTION:
Fundamentals of traffic engineering; Traffic flow characteristics; Travel demand forecasting; Analysis and design of the capacity of urban and rural roadway segments and intersections; Traffic control devices, systems and warrants; Transportation planning; Public transportation systems; Transportation safety. Credits: 3. Pre-requisite: CEE 250.

COURSE OBJECTIVES: The objectives of this course are to:

- Address the design and analysis of traffic engineering problems that deal with traffic stream characteristics and flow theory, traffic control devices and intersection control, highway capacity and level of service, and traffic signal
- Provide students with an understanding of the basic principles and practices of transportation planning and the traditional four-step travel-demand forecasting process
- Prepare students for oral presentation and written report on a transportation/ traffic engineering topic/project

COURSE OUTCOMES: Upon successful completion of this course, the students will be able to:

- Explain the fundamental speed, flow, and density relationship and apply traffic flow models to analyze traffic flow characteristics (CO1).
- Perform highway capacity and level of service analysis on a roadway segment and design a roadway segment for a specific capacity (CO2)
- Understand and utilize the traditional four-step travel-demand forecasting process to solve simple travel demand forecasting problems (CO3)
- Prepare oral presentation and written report on a transportation/traffic engineering topic/project(CO4)

TEXT BOOK(S):

1. C. Jotin Khisty and B. Kent Lall, "Transportation Engineering-An introduction", Prentice Hall, Upper Saddle River, New Jersey, USA, latest Edition/3rd Edition. **(Mandatory)**

2. Papacostas, C.S. and P.D. Prevedouros, "Transportation Engineering & Planning", 3rd Edition.. Prentice Hall, Upper Saddle River, NJ, 2001. ISBN 0-13-081419-9. **(Recommended)**
3. Nicholas J. Garber and Lester A. Hoel, "Traffic and Highway Engineering", Cengage Learning, 5th edition, January, 2014. **(Recommended)**

COURSE CONTENTS:

1. Course Overview & Introduction
2. Traffic Stream Characteristics (Chapter 5)
3. Highway Capacity Analysis (Chapter 7)
4. Intersection Control and Design; Traffic Signal and Signal Warrants (Chapter 8)
5. Public Passenger Transportation (Chapter 10)
6. Transportation Planning/Travel Demand Forecasting (Traditional Four-Step Process) (Chapter 11)
7. Traffic Accidents/Transportation Safety (Chapter 16)

AVAILABILITY OF COURSE MATERIALS:

Selected lecture notes/reading materials will be available in the "Resource" folder or supplied in class. Students are advised to check the Resource folder at regular intervals.

EVALUATION:

*Attendance and Participation	15%
Assignments/Homeworks (4*5)	20%
**Project	15%
Midterm Exam	25%
Final Exam	25%

*Attendance grading policy

Number of lectures attended	Score	Number of lectures attended	Score
23 or more	15%	17	9%
22	14%	16	8%
21	13%	15	7%
20	12%	14	6%
19	11%	13	5%
18	10%	12 or less	0%

**Requirements: a four-page (double spaced MS-Word text document) report and a group presentation (approximately 20 minutes; no more than 30 slides) (7.5+7.5 = 15%); Report must be submitted on the due date; All group members must present;

EXAM AND ASSIGNMENT POLICY:

The contents and formats of the exams (midterm and final) will be provided in the class. No excuse will be granted simply because someone was absent at previous class and did not know the exam contents. NO MAKE UP MID-TERM OR FINAL EXAM WILL BE ARRANGED UNLESS AN ABSOLUTELY UNAVOIDABLE VALID REASON FOR ABSENCE IS FOUND. For such unavoidable circumstances, written explanation of the situation must be submitted before the exam. If the mid-term exam cannot be held on the due date, the exam will be automatically shifted to the very next available class, unless otherwise announced. No assignments and reports will be accepted after the due date.

GRADING POLICY:
Generally, NSU grading policy will be followed. However, minor deviation is still possible depending on the situation.

CODE OF CONDUCT:
It is highly requested to maintain discipline in the class like not to be late, refrain from making noise during lecture time, not to leave the class early. Especially, adopting unfair means in the exams will be considered as a serious crime and the student shall be placed to the university disciplinary committee. Evidence of copying assignments shall be seriously punished as well. Regarding attendance, if someone is too late in the class or arrives after the attendance is given he/she will not get attendance in that class.

LECTURE SCHEDULE:
***** One Day = 1.5 lecture hours, Total 24 days lecture = 36 lecture hours

Day*	Topic/ Material Covered	Activity	Assign	Due
1	Course Overview & Introduction	Discussion		
2-7	Traffic Stream Characteristics (Chapter 5)- Greenshield and Greenberg's models; Intersection Control and Design; Traffic Signal and Signal Warrants, (Chapter 8)	Lecture	HW-1 Project	HW-1
8-11	Highway Capacity and Level of Service Concepts and Analysis (Chapter 7)	Lecture	HW-2	
12	Public Passenger Transportation (Chapter 10) Midterm Exam Review	Lecture		HW-2
13	Midterm Exam	Exam		
14	Public Passenger Transportation-continuing (Chapter 10)	Lecture		
15-20	Urban Transportation Planning- An Introduction; Travel Demand Forecasting (Traditional Four-Step Process–Trip Generation, Trip Distribution, Mode Usage, Trip Assignment) (Chapter 11)	Lecture	HW-3 HW-4	HW-3
21-22	Project- Presentation	Presentation		HW-4; Report
23-24	Traffic Accidents/Safety (Chapter 16); Final Exam Review	Lecture		
Final Exam (As per schedule declared by NSU)				