



North South University
Department of Civil and Environmental Engineering (CEE)
CEE 490B Special Topic: Road and Traffic Safety Engineering
Summer 2018

Course Syllabus

INSTRUCTORS: JBr - Prof. Javed Bari, PhD, PE, FIEB
Professor, CEE
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CLASS HOURS: Sec-1: ST 9:40 am – 11:10 am (Room#SAC304)

OFFICE HOURS: STR 4:00 pm – 5:00 pm, MW 11:30 am – 12:30 pm, or by appointment

COURSE DESCRIPTION:

This course has been designed to teach and train senior-level engineering students the needs, policies, methods and procedures required for enhancing road safety measures. The major topics include: Road safety policies; Governmental and local arrangements; Road safety audit; Accident data collection, reporting, database maintenance and data analysis; Identification of hazardous locations (Black Spots); Pedestrian and bi-cycle safety; Road safety manuals; Engineering solutions for road safety enhancement (geometric design, signs & marking, traffic calming devices/measures, traffic signal system, etc); Special cases (bridge approach, rail crossing, business center, etc.); Community awareness and training on road safety; and case study. **Prerequisite: CEE350.** Total credits: 3.

COURSE OBJECTIVES:

Upon successful completion of the course, the student will be able to:

Sl.	CO Description
CO1	Comprehend and practice advanced knowledge of road and traffic safety engineering at a professional level.
CO2	Investigate into the reasons for accidents for a location/mode, provide engineering solutions and prioritize transport safety projects.
CO3	Work in a group to conduct literature review on contemporary research works, study real transportation safety projects, and effectively disseminate the knowledge acquired to a larger audience.

REFERENCE BOOKS:

1. **Traffic and Highway Engineering** (4th or 5th edition) – by: Nicholas J. Garber and Lester A. Hoel. Publisher: Cengage Learning, USA.
2. **Transportation Engineering** (3rd edition) – by: C. Jotin Khisty and B. Kent Lall. Publisher: Prentice Hall (Pearson), USA.
3. **Highway Safety Manual** (latest edition) – by AASHTO (American Association of State Highway and Transportation Officials), USA (with latest supplement).

COURSE CONTENTS:

- ❖ Introduction to road and traffic safety: Historic accident data, Human factors, Road and traffic safety manuals (national and international);
- ❖ Road and traffic safety policies (national and international);
- ❖ Government and local arrangements;
- ❖ Fundamentals of road and traffic safety;
- ❖ Roadway safety management process;
- ❖ Network screening;
- ❖ Road and traffic safety audit;
- ❖ Diagnosis: accident data collection, reporting, database maintenance, data analysis, identification of hazardous locations;
- ❖ Selection of countermeasures: Engineering solutions for road and traffic safety enhancement (geometric design, signs & marking, traffic calming devices/measures, traffic signal system, etc), Special cases (bridge approach, rail crossing, business center, etc.);
- ❖ Economic appraisal;
- ❖ Prioritize projects;
- ❖ Safety effectiveness evaluation;
- ❖ Pedestrian safety;
- ❖ Bi-cycle safety;
- ❖ Community awareness on road and traffic safety;
- ❖ Community training on road and traffic safety;
- ❖ Case study/Term paper.

AVAILABILITY OF COURSE MATERIALS:

All the lecture notes are available at the university common folder “Resource”. You can print them from there. However, for some lectures, extra sheets might require to be collected from the photocopy shop. Other than lecture notes, relevant materials like class schedule, course outline, reading materials, etc are available at different sub-folders of the same as well. Students are advised to check the folders at regular intervals.

COURSE EVALUATION:

Class participation and attendance	10%
Assignments	10%
Quiz	10%
Case study/Term paper	15%
Midterm Exam	25%
Final Exam	30%

Total	100%
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EXAM POLICY:

The format of the class tests will be based on a combination of multiple choice or short questions as well as descriptive questions. Students are thus advised to prepare for any type of questions. Usually no makeup for class test is made. 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 any class test or 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.

EXAM NOTICE:

Prior notices for will be provided in the class, except for a sudden quiz. No excuse will be granted simply because someone was absent at previous class and did not know the exam notice.

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. About attendance, if someone is too late in the class he might not get attendance or half-attendance. On the premises of the University or at a University-sponsored program, students must abide by the Student Code of Conduct: <http://www.northsouth.edu/student-code-of-conduct.html>

LECTURE SCHEDULE:

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

Day*	Outcome/ Material Covered	Reference	Activity	Due
Day-1	Course overview	Handout	Discussion	-
Day-2	Introduction to road and traffic safety: historic accident data, human factors, road safety manuals	Handout	Lecture	-
Day-3	Road and traffic safety policies (national and international) and Government & local arrangements	Handout	Lecture	-
Day-4	Fundamentals of road and traffic safety	Highway Safety Manual (HSM)	Assign Case study	-
Day-5	Fundamentals of road and traffic safety, cont'd	HSM	Lecture	-
Day-6	Roadway safety management	HSM	Quiz-1+Lec.	-
Day-7	Network screening	HSM	Lecture	-
Day-8	Road and traffic safety audit	Handout	Assign HW-1	-
Day-9	Road and traffic safety audit, cont'd	Handout	Lecture	-
Day-10	Diagnosis of accident	HSM	Lecture	HW-1 Due
Day-11	Accident data collection & reporting	HSM	Lecture	-
Day-12	Accident database maintenance & data analysis	HSM	Lecture	-
Day-13	Identification of hazardous locations;	HSM	Quiz-2+Lec.	-
Day-14	Mid-term exam	-	Test	-
Day-15	Engineering solutions for road and traffic safety enhancement	Handout		-
Day-16	Engineering solutions, cont'd	Handout	Lecture	-
Day-17	Selection of countermeasures	HSM	Lecture	Case study report due
Day-18	Economic appraisal	HSM	Lecture	-
Day-19	Prioritize projects	HSM	Quiz-3+Lec.	-
Day-20	Safety effectiveness evaluation	HSM	Assign HW-2	-
Day-21	Pedestrian safety	Handout	Lecture	-
Day-22	Bi-cycle safety	Handout	Lecture	HW-2 Due
Day-23	Community awareness on road and traffic safety	Handout	Lecture	-
Day-24	Community training on road and traffic safety	Handout	Lecture	-
Final Exam (As per schedule declared by NSU)				