



CEN 425 Traffic Engineering and Management

Winter 2024

Course Credits: 4

Contact Hours: 56 hours

Instructor: TBA

Email:TBA

COURSE OBJECTIVES

This course is designed to provide students with a comprehensive understanding of the principles and practices involved in the planning, design, construction, and maintenance of highways and transportation systems. As vital components of modern infrastructure, highways play a crucial role in facilitating the movement of people and goods, contributing to economic development and societal well-being. Topics include urban transportation planning; driver, vehicle, and general traffic characteristics; traffic engineering and studies; highway capacity and level of service and more.

Upon Completion of this Course, students will be able to:

1. Understand the role of highways and transportation in economic development and societal well-being;
2. Develop skills in urban transportation planning, including land use integration and sustainable transportation solutions;
3. Analyze driver behavior, vehicle characteristics, and their impact on traffic flow;
4. Develop proficiency in traffic engineering principles and methodologies;
5. Apply geometric design principles to create safe and efficient highway layouts.

PREREQUISITES

ENR 240 Introduction to Surveying; CEN 211 Geotechnical Materials and Processes; CEN 285 Introduction to Civil Engineering Materials



GRADING

Grades will be determined by accumulating points, with 100 points being the maximum, as follows:

ITEM	POINTS
3 Homework	30 Points
2 Group Projects	20 Points
Midterm	25 Points
Final Exam	25 Points
Total	100 Points

Late submissions will be graded at the end of the course. Grades will be assigned according to the following rule:

$$A \geq 90 > B \geq 80 > C \geq 70 > D \geq 60 > F.$$

We reserve the right to make adjustments to the overall grading policy.

COURSE MATERIALS

Required Texts:

Nicholas J. Garber; Lester A. Hoel, *Traffic and Highway Engineering*, 5th Edition, Cengage Learning, 2015.

Recommended (Optional) Texts or Other Materials:

None

COURSE TOPICS

MODULE	TASKS
Module 1	Topics: Topic 1: Importance of Transportation Topic 2: Urban Transportation Planning Topic 3: Transportation Planning Institutions Topic 4: Driver Characteristics Assessments: Homework#1 Group Project#1



Module 2	<p>Topics: Topic 5: Vehicle Characteristics Topic 6: Traffic Engineering Studies Topic 7: Fundamental Principles of Traffic Flow Topic 8: Types of Volume Counts and Analysis of Volume Data</p> <p>Assessments: Homework#2</p>
Module 3	<p>Topics: Topic 9: General Concepts of Traffic Control Topic 10: Capacity and Level of Service for Highway Segments Topic 11: Capacity and Level of Service at Signalized Intersections Topic 12: Highway Surveys and Location</p> <p>Assessments: Midterm</p>
Module 4	<p>Topics: Topic 13: Geometric Design of Highway Facilities Topic 14: Special Facilities for Heavy Vehicles on Steep Grades Topic 15: Highway Earthwork and Final Plans Topic 16: Highway Drainage</p> <p>Assessments: Homework#3</p>
Module 5	<p>Topics: Topic 17: Forecasting Travel Demand Topic 18: General Principles of Flexible Pavement Design Topic 19: Evaluation Based on Economic Criteria Topic 20: Evaluation Based on Multiple Criteria</p> <p>Assessments: Final Exam Group Project#2</p>

ATTENDANCE

1) Class attendance is required. Missing classes without permission will lead to decrease in overall grade.

Missing less than two classes: no penalty.

Missing more than two classes: 7% will be taken off from the overall grade.

If the instructor reports a student's frequent missing of class to the Soochow University Academic Administration Office, the student might get a written warning and might be prohibited from attending final exam.

2) Participants in this course are expected to arrive in class promptly and adequately



prepared. The primary objective of this course is to critically engage with the readings and the subject matter. Therefore, course participants are expected to have completed the reading prior to class and prepare thoughtful reflections/commentaries to share with fellow colleagues.

LEARNING REQUIREMENTS

- 1) Late assignments are not acceptable and are subjected to grade deductions.
- 2) Assignments submitted in the wrong format will be counted as not submitted.
- 3) Failure to submit or fulfill any required course component results in failure of the class.
- 4) Make-up for midterm and final exams only with valid excuses, as defined by the University.
- 5) In order to earn a Certificate of Completion, participants must thoughtfully complete all assignments by stated deadlines and earn an average quiz score of 50% or greater.

TECHNOLOGY POLICY

The use of electronic devices in class is distracting, both for the user and for the rest of the class. Only non-programmable calculators can be used in the tests and exam. Any attempts to use cell phones and other electronic communication devices will be seemed as cheating. Laptops are discouraged, unless you use them for activities DIRECTLY related to the course (eg., note taking, reading course documents).

ACADEMIC INTEGRITY POLICY

Soochow University highly values the academic integrity and aims to promote the academic fairness, honesty and responsibility. Any academic dishonesty behaviors and any attempts to cheats and plagiarism will be reported to the university administration office. A written warning and the relevant penalties will be imposed. The record might be shown on the official university transcript.

DISABILITY ACCOMMODATION

Soochow University is committed to maintaining a barrier-free environment so that



蘇州大學
Soochow University

students with disabilities can fully access programs, courses, services, and activities at Soochow University. Students with disabilities who require accommodations for access to and/or participation in this course are welcome.

Note:

Please contact the University Administrative Office immediately if you have a learning disability, a medical issue, or any other type of problem that prevents professors from seeing you have learned the course material.