CE-UY 2343  
Transportation Engineering  

**Catalog Description:**
This course provides an introduction to transportation engineering. The course will cover travel demand forecasting, road user and vehicle characteristics, traffic engineering studies, engineering economic analysis, and highway design. The highway design element will focus on the basic design concepts of horizontal and vertical alignment, superelevation, and cross-section design. The course will also cover flexible pavement design, design of parking facilities, as well as bikeway and walkway design.

**Prerequisite:** None.

**Topical Outline**

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
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<tbody>
<tr>
<td>1</td>
<td>Introduction to the profession of transportation engineering. Overview of transportation systems, modes, and traffic facilities. Presentation and discussion of transportation statistics to illustrate the importance of transportation in the U.S. and the world.</td>
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<td>2-4</td>
<td>Travel Demand Forecasting: The traditional 4-step Transportation Planning Process (Trip Generation – Trip Distribution – Mode Split – Trip Assignment).</td>
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<td>5</td>
<td>Introduction to Traffic Studies; volume studies, speed studies, travel time &amp; delay studies, accident studies, and origin-destination studies.</td>
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<td>6</td>
<td>Evaluation of alternatives, including engineering economic analysis.</td>
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<td>7</td>
<td>Midterm Exam</td>
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<td>8</td>
<td>Driver, roadway, and vehicle characteristics and their influence on facility design. Introduction and importance of functional highway classification; AASHTO design vehicles and their use.</td>
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<td>9</td>
<td>Sight distances: stopping, passing, and decision. Horizontal alignment: circular curves and superelevation, compound curves and spirals.</td>
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<td>10</td>
<td>Vertical alignment. Use of Autodesk Civil 3D for horizontal and vertical design of roadways.</td>
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<td>11</td>
<td>Cross-sectional elements: lanes, shoulders, cross-slopes, medians.</td>
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<td>12</td>
<td>Principles of parking layout and design. Design of walkways and bikeways.</td>
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<td>13</td>
<td>Design of flexible pavements.</td>
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<td>14</td>
<td>Final Exam.</td>
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**Textbook(s):**

*Required*

Recommended (available from my office)

Course Objectives:

- To apply mathematics, science and engineering techniques to solve transportation related problems in transportation planning and highway design
- To perform basic freeway segments capacity analysis
- To gain an understanding of the transportation planning process
- To perform basic engineering economic analysis
- To enhance student's knowledge of contemporary issues
- To use Autodesk Civil 3D to perform parking layout design, as well as horizontal and vertical alignments

ABET Competencies Addressed:
(a) An ability to apply knowledge of mathematics, science, and engineering.
(c) An ability to design a system, component, or process to meet desired needs.
(e) An ability to identify, formulate and solve engineering problems.
(j) Knowledge of contemporary issues.
(k) An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Instructor: Prof. Jose M. Ulerio
15 Metrotech Center, 6th Floor, room 6W-22
Tel. 646.997.3178
Email: julerio@nyu.edu

Grading:
- Homework – 15%
- Midterm – 35%
- Projects – 20%
- Final – 30%
- OVERALL GRADE 100%

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<th>Numerical Value</th>
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<tr>
<td>D</td>
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• **NO EXAM MAKEUPS** (unless there are extenuating circumstances – documentation must be submitted to Dean’s Office).

• **NO LATE HOMEWORK WILL BE ACCEPTED.**

• **NO USE OF CELL PHONES IN CLASSROOM, ESPECIALLY DURING EXAMS.**

• **NO “My dog ate the homework” or “I had no internet access during the weekend” excuses allowed.**

• **NO USE OF UNAUTHORIZED MATERIALS** (e.g., Solutions Manual, etc) – If you break this rule you’ll be referred to the Dean of Students for disciplinary action that could result in receiving a failing grade for the course or disqualification from the University.

• **ATTENDANCE IS MANDATORY.** If you are out sick, you must bring in documentation to the Dean’s office. Unexcused absences will result in the loss of 1 point per day; applied towards your final grade.

**Assignments:**
Assignments include homework and design projects related to class materials. Design projects will involve both individual and group assignments. There will be about one HW assignment per week. They must be submitted via email before the due date.

**Moses Center Statement of Disability**
If you are student with a disability who is requesting accommodations, please contact New York University’s Moses Center for Students with Disabilities (CSD) at 212-998-4980 or mosecsd@nyu.edu. You must be registered with CSD to receive accommodations. Information about the Moses Center can be found at www.nyu.edu/csd. The Moses Center is located at 726 Broadway on the 2nd floor.

**NYU School of Engineering Policies and Procedures on Academic Misconduct**
Students in the class must obey the Code of Conduct of the School of Engineering (http://engineering.nyu.edu/life/student-affairs/code-of-conduct).

In particular, pay attention to the policies and procedures on academic misconduct.

A. Introduction: The School of Engineering encourages academic excellence in an environment that promotes honesty, integrity, and fairness, and students at the School of Engineering are expected to exhibit those qualities in their academic work. It is through the process of submitting their own work and receiving honest feedback on that work that students may progress academically. Any act of academic dishonesty is seen as an attack upon the School and will not be tolerated. Furthermore, those who breach the School’s rules on academic integrity will be sanctioned under this Policy. Students are responsible for familiarizing themselves with the School’s Policy on Academic Misconduct.
B. Definition: Academic dishonesty may include misrepresentation, deception, dishonesty, or any act of falsification committed by a student to influence a grade or other academic evaluation. Academic dishonesty also includes intentionally damaging the academic work of others or assisting other students in acts of dishonesty. Common examples of academically dishonest behavior include, but are not limited to, the following:

1. Cheating: intentionally using or attempting to use unauthorized notes, books, electronic media, or electronic communications in an exam; talking with fellow students or looking at another person’s work during an exam; submitting work prepared in advance for an in-class examination; having someone take an exam for you or taking an exam for someone else; violating other rules governing the administration of examinations.
2. Fabrication: including but not limited to, falsifying experimental data and/or citations.
3. Plagiarism: intentionally or knowingly representing the words or ideas of another as one’s own in any academic exercise; failure to attribute direct quotations, paraphrases, or borrowed facts or information.
4. Unauthorized collaboration: working together on work that was meant to be done individually.
5. Duplicating work: presenting for grading the same work for more than one project or in more than one class, unless express and prior permission has been received from the course instructor(s) or research adviser involved.
6. Forgery: altering any academic document, including, but not limited to, academic records, admissions materials, or medical excuses.

**Missing exams/projects:**
If you believe you have a legitimate excuse, bring written documentation and contact Ms. Simonsen as soon as possible:

Ms. Judith Simonsen  
Coordinator of Compliance  
Office of Student Affairs  
LC 240C, Dibner Building  
646-997-3046  
Js6244@nyu.edu

She will then contact me directly if the excuse is deemed justified (e.g., a death in the family).