

# DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING

# **TRAN 615 Traffic Studies and Capacity Analysis - Fall 2024**

#### **Course Description:**

The objective of this course is to gain an understanding of highway capacity concepts and traffic studies used to evaluate the performance of transportation facilities. To be able to analyze the operation performance of interrupted flow facilities, including basic freeway sections, weaving areas, ramps and ramp junctions, multi-lane and two-lane roadways.

#### Canvas:

The canvas course can be found at: <u>https://canvas.njit.edu/.</u> Please sign in using your UCID and password. If you are unable to log in or experience a problem please contact the NJIT Helpdesk - (973) 596-2900.

Instructor: Dr. Dejan Besenski Office: Tiernan Hall Room 276 Virtual Office Hours: Tuesdays and Wednesdays, 10:00 am – 12 pm (or by appointment). <u>Zoom Meeting Room</u> In-Office Hours: Thursday, 1 – 2 pm Email: <u>besenski@njit.edu</u>

# **Required Text:**

Roger P. Roess, Elena S. Prassas and William R. McShane, Traffic Engineering, Prentice-Hall Inc, 5th Edition 2019.

#### Reference Text:

Highway Capacity Manual 6th Edition: A Guide for Multimodal Mobility Analysis. Transportation Research Board, National Research Council, Washington, D.C., 2016

# Weekly Topics:

Week of	Topic	Reading
9/2	Introduction – Traffic Flow Fundamentals	Chapters 1 and 5
9/9	Introduction to Traffic Capacity Analysis	Chapter 7 and 28
9/16	Multilane Highways Capacity Analysis	Chapter 28
9/23	Weaving Area Capacity Analysis	Chapter 29
9/30	Ramps and Ramp Terminal Capacity Analysis	Chapter 30

10/9	Test # 1 – Covering Chs. 1, 5, 7, 28	
10/14	Two-Lane Rural Highways Capacity Analysis	Handout
10/21	Freeway Systems Capacity Analysis	Handout
10/28	Traffic Studies – Statistical Analysis	Handout
11/4	Volume Studies and Characteristics	Chapters 9 and 10
11/13	Test # 2 – Covering Chs. 29 and 30	
11/18	Speed, Travel Time, and Delay Studies	Chapter 11
11/25	Highway Traffic Safety Studies	Chapter 12
12/2	Highway Traffic Safety Studies	Chapter 12
	Final - Part 1- Test Covering Two-Lane	
12/11	Hwys and Freeway Systems Part 2 - Statistical Analysis Project	

#### **Grading Policy:**

HW	20%
<b>Discussion Question</b>	5%
Tests (2)	50%
Final Test/Project	25%

#### Grading Scale:

<b>A</b> :	100-90
B+:	89-85
B:	84-80
C+:	79-75
C:	74-70
F:	Below 60

#### NJIT Honor Code:

Academic Integrity is the cornerstone of higher education and is central to the ideals of this course and the university. Cheating is strictly prohibited and devalues the degree that you are working on. As a member of the NJIT community, it is your responsibility to protect your educational investment by knowing and following the academic code of integrity policy that is found at:

http://www5.njit.edu/policies/sites/policies/files/academic-integrity-code.pdf.

Please note that it is my professional obligation and responsibility to report any academic misconduct to the Dean of Students Office. Any student found in violation of the code by cheating, plagiarizing or using any online software inappropriately will result in disciplinary action. This may include a failing grade of F, and/or suspension or dismissal from the university. If you have any questions about the code of Academic Integrity, please contact the Dean of Students Office at dos@njit.edu.

#### Assignment Policy:

Homework will NOT be thoroughly graded, but you will still need to turn in your homework. Credit will be provided based on your final answers given. No credit will be provided once solutions have been posted. For homework assignments you should submit two items: (1) electronic copy of the completed homework (Word, pdf, excel); and (2) An excel spreadsheet I will provide to you with every homework assignment where you will input your final answers for your homework. You will not be able to include all of your answers in the excel spreadsheet.

You should identify how you will submit assignments electronically. You can submit all types of attachments (pdf, doc, xls). For some assignments which includes calculations, it may be easier to scan your written work into a pdf and submit that document, rather than type out the equations. Please avoid submitting attachments that are photos of your assignment as it is typically difficult for me to read these types of attachments. If you choose to submit excel spreadsheets, please note that I will not be able to look at your formula or how the calculation was determined. Therefore, you should show all the steps to get to your final calculation.

# **Discussion Questions:**

Discussion questions will be posted asking you to provide your thoughts on the question as it relates to a weekly topic. You should provide a brief, yet thoughtful, response. You should also provide a brief, thoughtful response to three other students' posts stating the basis for your agreement or disagreement or asking a follow-up question with a justification for your question.

# Important Dates:

Test #1	Wednesday, October 9, 2024 (7:00 pm – 8:45 pm)
Test #2	Wednesday, November 16, 2024 (7:00 pm – 8:45 pm)
Final Test	Wednesday, December 11, 2024 (7:00 pm – 9:00 pm)
Final Project	Due by December 16 <sup>th</sup> .

Please make all efforts to be available to take the exam during these dates and times.

For International Students taking the course in your home country, these dates will be the same as domestic students, however, the time will be adjusted. Please email me the name of your home country.

# Exam Policy:

Tests 1 and 2 are 90 minutes, administered through Canvas. Tests consists of various types of questions including some fill-in questions, some multiple choice questions, some calculation questions. The questions and some input variables will be randomly determined so each test will have some differences. To save time, you should provide your final answer during the test time and must submit any calculations used to reach the final answer after the completion of the test.

# Exam Proctoring Requirement:

Exam Proctoring Requirement NJIT policy requires that all midterm and final exams must be proctored, regardless of delivery mode, in order to increase academic integrity. In this course you are required to use ProctorU Review+ to ensure academic integrity for exams. ProctorU Review+ uses an automated proctoring solution via Artificial Intelligence (AI) during the exam, followed by a full review from a ProctorU proctor. Similar to Respondus Monitor and LockDown Browser, your webcam and screen activity will be recorded during the exam. After completing their review, a proctor sends an incident report to the instructor if any potential academic integrity violations occur. More information can be found at the following link: <a href="https://ist.njit.edu/proctoru-review">https://ist.njit.edu/proctoru-review</a>.

# **Syllabus Information:**

The dates and topics of the syllabus are subject to change; however, students will be informed of these changes.

# Email Policy:

Emails will generally be responded to within 24 business hours, Monday - Friday.

#### **Items Required for this Course:**

1. Webcam for taking exams.