

DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING

**TRAN 615-851/853 Traffic Studies and Capacity Analysis - Fall 2023**

**Course Description:**

The objective of this course is gain and 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: <https://canvas.njit.edu/>. 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. Babu Veeregowda  
Virtual Office Hours: by appointment  
Email: bkv4@njit.edu

**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:**

<u><a href="#">Week of</a></u>	<u><b>Topic</b></u>	<u><b>Reading</b></u>
9/11	Introduction – Traffic Flow Fundamentals	<b>Chapters 1 and 5</b>
9/18	Introduction to Traffic Capacity Analysis	Chapter 7 and 28
9/25	Multilane Highways Capacity Analysis	Chapter 28
10/2	Weaving Area Capacity Analysis	Chapter 29
10/9	Ramps and Ramp Terminal Capacity Analysis	Chapter 30
<b>10/16</b>	<b>Test # 1 – Covering Chs. 1, 5, 7, 28</b>	

10/23	Two-Lane Rural Highways Capacity Analysis	Handout
10/30	Freeway Systems Capacity Analysis	Handout
11/6	Traffic Studies – Statistical Analysis	Handout
11/13	Volume Studies and Characteristics	Chapters 9 and 10
<b>11/20</b>	<b>Test # 2 – Covering Chs. 29 and 30</b>	
11/27	Speed, Travel Time, and Delay Studies	Chapter 11
12/4	Highway Traffic Safety Studies	Chapter 12
12/11	Highway Traffic Safety Studies	Chapter 12
12/18	<b>Final Test - Covering Two-Lane Hwys, Freeway Systems, Statistical Analysis, Traffic Studies and Highway Safety</b>	

### **Grading Policy:**

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

### **Grading Scale:**

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

### **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](mailto:dos@njit.edu).

### **Homework/Assignment Policy:**

Homework will be posted on the Canvas. The submission date for each homework will be posted on the Canvas as well. 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 and calculation and worksheet wherever it is necessary. For homework assignments you should submit final answer, and calculation and worksheet wherever is appropriate/necessary in a legible manner.

I prefer you to send me your homework by email: [bkv4@njit.edu](mailto:bkv4@njit.edu) rather than posting on Canvas. You can submit all types of attachments (pdf, doc, xls) to support the homework via email. For some assignments which includes calculations and description, 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.

### **Important Dates:**

Test #1	Monday, October 16, 2023 (7:00 pm – 8:30 pm)
Test #2	Monday, November 20, 2023 (7:00 pm – 8:30 pm)
Final Test	Monday, December 18, 2023 (7:00 pm – 8:30 pm)

The test questions/materials will be emailed 5 min before the exam begins (7 PM) so that you can print them as necessary and write the answers in the space provided. You must submit the test materials back to me via email ([bkv3@njit.edu](mailto:bkv3@njit.edu)) within 15-min after the test ends (8:30 PM). 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. Based on the timings the test materials will be sent 5-min before the test begins and you must return the materials 15-min after the test ends. Please email me the name of your home country.

Throughout your semester, please feel free to contact me via email ([bkv4@njit.edu](mailto:bkv4@njit.edu)). You can also contact me via phone by call me on my cell 609 468 4396 by my making appointment.

### **Exam Policy:**

Tests 1 and 2 are 90 minutes, administered through Canvas. Tests consist 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 we will use either ProctorU Record, or Respondus Monitor with LockDown Browser or the exam will be monitored using Webex. The following provides a brief description of these proctoring options: <https://ist.njit.edu/online-course-exam-proctoring>.

**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.
2. You can use the application: 'Adobe Scan' from your phone in order to scan homework and test materials.