NJIT New Jersey's Science & Technology University

DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING

TRAN 752 Traffic Control - Spring 2024

Course Description:

The objective of this course is gain and understanding of traffic control laws and devices. To be able to analyze the operation of traffic signals and to describe the operation of these signals in a technical report.

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.

Canvas is not intended to replace the syllabus. You will still need to refer to the syllabus.

Instructor: Prof. Dejan Besenski
Virtual Office Hours: Mondays and Wednesdays, 10:00 am – 12 pm (or by appointment).
https://njit.webex.com/meet/db44
Email: besenski@njit.edu

Required Text:

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

The lecture notes are not intended to replace the text for the course. The lecture notes introduce the concepts and provide an example of the procedure.

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
1/16	Communicating with Drivers: Traffic Control Devices	Chapter 4, Chapter 16

1/22	Fundamentals of Intersection Design and Layout	Chapter 15
1/29	Principles of Intersection Signalization	Chapter 18
2/5	Fundamentals of Signal Timing and Design: Pre-timed Signals	Chapter 19
2/12	Capacity and Level of Service Analysis: Signalized Intersections (Part 1)	Chapter 22
2/19	Capacity and Level of Service Analysis: Signalized Intersections (Part 2)	Chapter 22
2/26	**Test No. 1 – Wednesday, February 28th**	-
3/4	Traffic Simulation/Synchro	Lecture Notes
3/11	SPRING RECESS☺- NO CLASS	
3/18	Urban Streets and Arterials: Complete Streets and Levels of Service/Signal Coordination and Arterials and Networks	Chapter 21
3/25	Fundamentals of Signal Timing and Design: Actuated Signals	Chapter 20
4/1	Unsignalized Intersections	Chapter 25
4/8	Roundabouts	Chapter 25
4/15	**Test No. 2 – Wednesday, April 17th**	-
4/22	Alternative Intersections	Handout
5/1	**Final Project Due – Thursday, May 3th**	

Grading Policy:

HW	**10%**
Projects	**25%**
Tests(2)	**40%**
Final Project	**25%**

Grading Scale:

A:	**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.

I have reported students to the Dean of Students for cheating or suspicion of treating on many occasions with them receiving a failing grade or a zero on the assignment in question.

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.

You can scan documents using your smart phone by following the steps:
For iphones: https://support.apple.com/en-us/HT210336
For androids: https://support.google.com/drive/answer/3145835?co

Important Dates:

Test #1 Thursday, February 28th
Test #2 Thursday, April 15th

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

Exam Policy:

All exams are 90 minutes administered through Canvas. Tests consists of calculation and essay/definition questions. Some questions and some input variables are 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:

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 Webex Exam will be used as the proctoring tool.

A Webex exam session will be scheduled by the instructor and the exam in Canvas will be password protected. Students will need to connect to the Webex session twice using two devices. One device on which the test will be taken, the second device, such as a phone, also logged into webex showing the screen, keyboard, desk area and student taken the test. When the instructor is ready to start the exam they will provide the exam password in the meeting so all students can begin the quiz. The instructor will then watch students, via the web camera, as they take the exam. Students are expected to remain connected to the Webex session until their exam is submitted.

In order to use Webex for proctored exams, you will need the following:

- High-speed internet connection
- Webcam (internal or external) or smartphone with camera
- Microphone or smartphone with camera

Tips for Ensuring a Smooth Experience while using Webex:

- Connect to your Webex session before class starts.
- Use Firefox or Google chrome for your internet browser
- If possible, use a wired connection while taking the test
- Log into Canvas before connecting to Webex.

If you encounter technical difficulties with your exam, you should contact the IST Service Desk at 973-596-2900 or Media and Technology Support Services at 973-596-3005.

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:

Webcam for taking exams.

Outcomes Course Matrix –

Strategies, Actions and Assignments	ABET Student Outcomes (1-7)	Program Educational Objectives	Assessment Measures
Student Learning Outcome 1:			
	1	1	Exams
Student Learning Outcome 2:			
Student Learning Outcome 3:			

CEE Mission, Program Educational Objectives and Student Outcomes

The mission of the Department of Civil and Environmental Engineering is:

- to educate a diverse student body to be employed in the engineering profession
- to encourage research and scholarship among our faculty and students
- to promote service to the engineering profession and society

Our Program Educational Objectives are reflected in the achievements of our recent alumni:

1. Engineering Practice: Alumni will successfully engage in the practice of civil engineering within industry, government, and private practice, working toward safe, practical, sustainable solutions in a wide array of technical specialties including construction, environmental, geotechnical, structural, transportation, and water resources.

2. Professional Growth: Alumni will advance their technical and interpersonal skills through professional growth and development activities such a graduate study in engineering, research and development, professional registration and continuing education; some graduates will transition into other professional fields such as business and law through further education.

3. Service: Alumni will perform service to society and the engineering profession through membership and participation in professional societies, government, educational institutions, civic organizations, charitable giving and other humanitarian endeavors.

Our Student Outcomes are what students are expected to know and be able to do by the time of their graduation:

1. an ability to identify, formulate and solve complex engineering problems by applying principles of engineering, science and mathematics
2. an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety and welfare, as well as global, cultural, social, environmental and economic factors
3. an ability to communicate effectively with a range of audiences
4. an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental and societal contexts
5. an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive

environment, establish goals, plan tasks and meet objectives

6. an ability to develop and conduct appropriate experimentation, analyze and interpret data and use engineering judgment to draw conclusions
7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies