

Spring 2020

## TRAN 625-852: Public Transportation Operations and Technology

Steven Chien

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# **NEW JERSEY INSTITUTE OF TECHNOLOGY**

## **TRAN 625 (SPRING 2020)**

### **PUBLIC TRANSPORTATION OPERATIONS AND TECHNOLOGY**

#### **Section: 852**

INSTRUCTOR: Dr. Steven Chien, Room 280, Tiernan Hall  
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E-mail: [chien@njit.edu](mailto:chien@njit.edu)  
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OFFICE HOURS: By Appointment

LECTURES: Online

GRADING: Class Participation 10%  
Homework 30%  
Midterm Exam 30%  
Final Exam 30%

Prerequisite: graduate standing in civil or industrial engineering or instructor approval. Presentation of the technological and engineering aspects of public transportation systems. Historical development of public transportation technologies. Vehicle and right-of-way characteristics, capacity and operating strategies. Public transportation system performance. Advanced public transportation systems. Same as CE 625.

#### **COURSE DESCRIPTION:**

The course provides the basic introduction to the field of public transportation operations, technology, and analysis. Approaches provided in this course will be applicable to different types of public transportation system problems. The approaches will incorporate concepts from economics, engineering, operations research, and theoretical analysis. Numerical examples will be provided to build understanding of the concepts and to indicate how they can be applied in practice to various modes and problems.

#### **REQUIRED TEXTS:**

Vukan R. Vuchic, Urban Transit Systems and Technology, John Wiley & Sons, Inc., 2007. <http://www.wiley.com/WileyCDA/WileyTitle/productCd-047175823X.html>

## TENTATIVE SCHEDULE

<b>WEEK</b>	<b>TOPIC</b>	<b>READING</b>
Jan. 20	Course Introduction	Class Notes
Jan. 27	Course Introduction	Class Notes
Feb. 3	Public Transportation System Overview	Chap. 1
Feb. 10	Classic Optimization Methods	Class Notes
Feb. 17	Vehicle Characteristics and Motion	Chap. 3
Feb. 24	Station-to-Station Travel Analysis	Chap. 3
Mar. 2	Urban Passenger Transport Modes	Chap. 2
Mar. 9	Transportation System and User Costs	Class Notes
<b>Mar. 16</b>	<b>Spring Recess (No Classes Scheduled)</b>	
<b>Mar. 23</b>	<b>Midterm Exam</b>	
Mar. 30	Transportation System Performance	Chap. 4
Apr. 6	Microscopic Simulation Concepts and Tools	Class Notes
Apr. 13	Simulation of Bus Operations - Case Study	Class Notes
Apr. 20	Transit Service Quality & Headway Regularity	Class Notes
Apr. 27	Concepts & Intelligence in Multimodal Transportation	Chap. 7 & 8
<b>May 4</b>	<b>Final Exam</b>	

NJIT Honor Code: the NJIT Honor Code will be upheld; any violations will be brought to the immediate attention of the Dean of Students.

*“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)”