Fall 2024

TRAN 603 - 101: INTROD TO URBAN TRANSP PLANNING

I Jy (Steven) Chien

John A. Reif, Jr.

Department of Civil and Environmental Engineering

NJIT New Jersey's Science & Technology University

TRAN 603 – Fall 2024

Introduction to Urban Transportation Planning

Instructor

Steven Chien, Ph.D.
Professor of John A. Reif, Jr. Dept. of Civil/Environmental Engineering
New Jersey Institute of Technology
Office: Room 280, Tiernan Hall
Phone: (973) 596-6083
E-mail: chien@njit.edu

Class:

CKB 220, 6:00 PM ~ 8:50 PM on Thursdays

Office Hours:

3:00 PM ~ 5:00 PM on Thursdays

Course Description

The course will introduce the concepts of urban travel analysis, community and land activity related to transportation systems, and socio-economic aspect of transportation planning. The knowledge of the analytical models, including the design and use of mathematical models for the estimation of transport demand in the framework of major strategic transportation planning will also be discussed.

Course Objectives

- Understand the principles and practices of urban transportation planning
- Understand the interactions between transportation planning and socio-economic, demographic, and land use characteristics
- Learn transportation planning processes and forecasting models
- Attain the capability to deal with transportation planning problems within the context of society, data availability and practical constraints

Course Content

The course consists of a number of lectures, and several exercises. The following subjects will be covered:

- The functions of models in the transportation system analysis.
- Types of models and their applications.
- Theoretical foundations (travel choice theory).
- Aggregated models for trip generation, distribution, model split and network assignment.
- Disaggregated choice models.
- Estimation of model parameters and calibration.

Final Attainment Level

After completing the course, the students are expected:

1. To have knowledge of the urban transportation planning process
2. To have knowledge of the structure of the modeling analysis process in transportation planning, of the related computational models, their theoretical foundations and their behavioral backgrounds.
3. To have insight into the operation of the quantitative analysis process in transportation planning, in the derivation, the operation and the application possibilities of the different types of transportation models, as well as in the estimation process of model parameters based on travel and traffic observations.
4. To attain skills in:
    - Building a system description of a transportation network
    - Setting up simple transportation planning models
    - Calculating and analyzing transportation demand
    - Interpreting model results.

Instructional Material

- **Textbook**: Michael D. Meyer and Eric J. Miller, Urban Transportation Planning, 2nd Edition, The McGraw-Hill Companies, 2000. ISBN-10: 0072423323.
- Class Notes, Handouts, PowerPoint Presentations, and Narrated Lectures

Tentative Course Outline

Date	Topic	Textbook
Sep 5	Course Introduction Purpose and Goals of Transportation Planning	Class Notes
Sep 12	Urban Transportation Planning Process Systems Approach to Transportation Planning	Ch. 1 ~ 3
Sep 19	Transportation Demand Transportation Cost Concepts of Demand Elasticity	Ch. 5
Sep 26	“Four-Step” Transportation Demand Modeling	Ch. 4 ~ 5
Oct 3	Trip Generation Regression Models and ITE Trip Generation Book Cross-Classification Models	Ch. 5 Class Notes
Oct 10	Trip Distribution Gravity Model Calibration of a Gravity Model	Ch. 5 Class Notes
Oct 17	Modal Split (Mode Choice) User Utility Theory Calibration of a Modal Split Model	Ch. 5 Class Notes
Oct 24	Midterm Exam	
Oct 31	Transportation Network Design Transportation Supply Analysis	Ch. 7. Class Notes
Nov 7 Nov 14	Traffic Assignment Network Equilibrium: User Equilibrium and System Optimal	Ch. 5 & 7 Class Notes
Nov 21	Contemporary Urban Transportation Planning Topic: Work Zone Planning	Class Notes
Nov 26	Contemporary Urban Transportation Planning Topic: Facility Planning	Class Notes
Nov 28	**Thanksgiving Recess (No class)**	
Dec 5	Contemporary Urban Transportation Planning Topic: Service Planning	Class Notes
Dec 12	Reading Day	
Dec 19	Final Exam	

Homework

There will be 6~8 homework assignments following the lectures, which shall be completed independently.

Exams

There will be a midterm and a final exam, which shall be completed independently.

Grading

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

A:	100-90
B+:	89-85
B:	84-80
C+:	79-75
C:	74-70
D:	69-60
F:	Below 60

General Policy

Assignments and exams are to be completed by the due dates. Late submission will not be acceptable.

Makeup Policy

There will be **NO** makeup for exams unless there are justifiable circumstances.

Code of Conduct

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”