

Tennessee Technological University
Department of Civil & Environmental Engineering
CEE 5660 Transportation Planning

2017 Catalog Data:	System planning and evaluation. Characteristics, impacts, and costs. User patterns. Alternative analysis
Required Textbook:	<u>Transportation Engineering and Planning, 3rd edition</u> by Papacostas, C. S. and P.D. Prevedouros, 2001
Faculty Coordinator:	Daniel A. Badoe, Ph.D. Professor of Civil and Environmental Engineering
Participating Faculty:	Steven Click, Ph.D., PE. Associate Professor of Civil and Environmental Engineering
Prerequisites:	CEE 3610-Transportation Engineering
Goal:	Development of transportation plans for metropolitan regions

Course learning objectives:

1. Understand the factors and issues that have shaped and continue to shape the evolution of urban transportation planning in the US
2. Know the key elements of the regulations that govern the conduct of urban transportation planning in the US
3. Develop the analytical capability to design and execute an urban transportation planning study

Major Topics Covered:

1. Context for Urban Transportation Planning and Legislation that Governs Planning Process
2. The Planning Process: Basic Definitions and Concepts
3. Urban Transportation System Characteristics & Planning Issues
4. Demand Analysis I: Basic Concepts; Simplified Methods for Demand Analysis; Trip Generation (ITE Trip Generation Report, Linear Regression Analysis, and Cross Classification Analysis)
5. Demand Analysis II: Trip Distribution Modeling
6. Demand Analysis III: Mode Choice Modeling
7. Demand Analysis IV: Traffic Assignment
8. Traffic Impact Studies
9. Supply Analysis: Performance, Costs and Impacts (Noise Prediction, Air Quality, Road safety performance measures), Analysis of Deterministic Queuing Systems
10. Transportation Data Collection and Management
11. Economic Evaluation of Transport Projects: Process, Issues, and Methods

Measurable Outcomes:

1. Know the historical development of urban transportation planning in the USA, and legislation that currently guides the transportation planning process.
2. Know the entity required to conduct transportation planning at the metropolitan level, and what planning-products this entity is required to produce by US Federal law
3. Know how to design and conduct Household Travel Behavior Surveys.
4. Forecast the traffic volume expected to use a transportation facility using trend analysis, and price elasticities of travel demand
5. Apply the methods trip generation to forecast volume of traffic generated by land use activities in a traffic zone
6. Apply the gravity model to forecast the spatial distribution of travel
7. Apply the multinomial logit model to forecast volume of trips by mode in a corridor
8. Apply the user-equilibrium principle to assign traffic to the routes of a highway network
9. Predict the environmental impacts of vehicular traffic operations
10. Estimate transportation performance measures such as speed, density, occupancy, flow, etc.
11. Evaluate transportation alternatives