

Tennessee Technological University
Department of Civil & Environmental Engineering
CEE 6470 – Transportation Demand Analysis

- 2017 Catalog Data: CEE 6470- The course covers in-depth the theory and development of models of trip generation, trip distribution, mode choice, and traffic-assignment.
- Required Textbook: Modeling Transport, 4th Edition by J. de D. Ortuzar and L. G. Willumsen
- Faculty Coordinator: Dr. Daniel Badoe, Professor of Civil and Environmental Engineering
- Participating Faculty: Dr. Steven Click, Associate Professor of Civil and Environmental Engineering
- Prerequisites: CEE4660/5660: Transportation Planning
Introductory course in probability and statistics
- Goal: To provide students with an in-depth treatment on the quantitative modeling of transportation demand for the purpose of generating travel forecasts under alternative urban and transportation system conditions.

Course learning objectives:

1. Formulation of travel demand models from travel behavior theory and consumer theory in economics
2. Specification and statistical estimation of travel demand models
3. Application of travel demand models to forecast travel under different urban and transport system conditions
4. Review of travel demand literature on selected topics

Major Topics Covered:

- | | |
|---|--|
| 1. Multiple regression analysis | 6. Discrete Choice Models (Binary & Multinomial Logit) – Theory, Estimation, and Aggregation |
| 2. Microeconomic theory applied to travel demand - introduction | 7. Traffic Assignment |
| 3. Trip Generation Analysis (Theory and Estimation) | 8. Travel Surveys |
| 4. Trip Distribution Analysis (Theory and Estimation) | 9. Time of Day Modeling |
| 5. Modal Split and Direct Demand Modeling (Theory and Estimation) | 10. Freight/Truck Demand Models |
| | 11. Pedestrian/Bicycle Mode Demand |
| | 12. Introduction to activity-based approach to travel demand modelin |

Measurable outcomes:

Students will be expected to:

- :
1. Be able to design and execute a Household Travel Behavior Survey.
 2. Estimation of cross-classification and linear regression trip generation models and their applications to forecast trips under alternative land use scenarios
 3. Estimation of trip distribution models and their application to predict the spatial pattern of travel under alternative land use and transport system scenarios
 4. Estimation of disaggregate mode choice models and their application to forecast the distribution of trips by mode between origin-destination pairs
 5. Apply the user-equilibrium principle to assign forecast origin-destination traffic to the routes of a highway network
 6. Critical review papers on topics that include freight demand modeling, and the modeling of the demand for travel by non-motorized modes of transportation
 7. Oral presentation of the literature reviews undertaking of relevant topics in travel demand forecasting