THE PENNSYLVANIA STATE UNIVERSITY
Department of Civil and Environmental Engineering

CE 521   **Transportation Networks / Systems Analysis**   **Fall 2003**

Instructor: Konstadinos G. Goulias, 231P Sackett Building -- 863-7053, 205 TRB - PTI -- 863-7926
    Goals: Gain familiarity with the systemic and analytical approaches used in transportation planning. Understand the use of models for description of demand and supply in transportation, land use, activity analysis, forecasting of travel demand, and decision making by public agencies. Become aware of GIS-based, statistical, and simulation tools and methods for transportation analysis.

Textbook/References:
1.   Ortuzar, J. de Dios and L. G. Willumsen (2001). Modelling Transport, Third Edition, Wiley (OW).
2.   Goulias K.G. (2003) Transportation Systems Planning, CRC Press (KG)
3.   Other research articles on as needed basis

A.   **TOPICS**

TRANSPORTATION SYSTEMS AND NETWORKS – OVERVIEW (Week 1)

    Transportation planning and modeling, systems analysis, attitudes, perceptions, and travel behavior, transportation policies and the need for scenario creation models and methods
    OW Chapter 1 and Chapter 2
    KG Chapter 1

TIME USE AND WAYFINDING (Week 2)

    Time space prisms, data and analytical methods, rational economic behavior and satisficing behavior
    KG – Chapter 2
    KG – Chapter 3.

LAND USE, URBAN FORM, AND LIFESTYLES (Week 3)

    Land use models, urban simulation models (URBANSIM, POLIS, METROPOLIS, DRAM/EMPAL models)Simulation models – advantages and disadvantages. Relationship between travel behavior and urban form.
    KG – Chapter 5
    KG – Chapter 6

GOODS MOVEMENT (Week 4)

    Models, methods, issues, and potential solutions.
    KG – Chapter 4

DATA ISSUES (Week 5)

    Data types and methods
    OW – Chapter 3
    KG – Chapter 7
    Other reports from KGG

URBAN TRANSPORTATION MODELS (Week 7, 8, 9, 10, 11, 12)

    Urban Transportation Planning System, Aggregate Models, Disaggregate Models, Sequential and Simultaneous Equilibrium Methods, Direct Demand models

OW – Chapter 4
OW – Chapter 5
OW – Chapter 6,7, 8
OW – Chapter 10, 11, 12

GUEST SPEAKERS (weeks 13, 14)

Telecommunications and travel – data analysis in Seattle
CentreSIM model system