

Methods of Transportation Analysis
240-792
Civil Engineering and Mechanics
University of Wisconsin – Milwaukee
Spring 2003

Instructor Information

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Meeting Times: M 5:30-7:10 pm; W 5:30-6:20 pm

Final Examination Time: Monday, May 12, 5:30-7:30 pm

Catalog Description: 3 cr. G. Mathematical tools useful in analysis of transportation systems. Process of modeling and simulation, matrix techniques, network analysis, statistical analysis, etc. As related to transportation. Use of standard packaged computer programs. Class project may be utilized to develop these skills. Prereq: grad st; CompSci 151(P) or equiv. Civ Eng 590(P)

Objectives

- To understand how to apply the latest software for transportation planning
- To understand conventional and state-of-the art methods of traffic and transit forecasting
- To understand how to collect and apply transportation data for both short-term and long-term plans
- To understand how travel forecasting methods relate to traffic analysis
- To understand how to select and calculate measures of effectiveness

Text: Various reading will be made available, depending on the needs of the class. See individual topics for specific reading assignments. Many documents can be downloaded from the Shared/ce792 directory of the computer "ajh" (read-only access).

Organization of the Course

This course will include lectures, demonstrations, workshops, and seminar sessions. The course will emphasize hands-on use of various methods. The nature and

sequence of topics will be determined based on class needs. It is expected that most of the topics will involve computer software. Each student will be responsible for a seminar topic of approximately 50 minutes. Each student must complete a term project.

Topics

0. Introduction
1. Elementary Network Analysis (1 week)
Readings: General Network Editor Reference Manual; Horowitz, "Integrating GIS Concepts into Transportation Network Data Structures"
Assignments: GNE Workshops
2. Elementary Travel Forecasting (3 weeks)
Reading: Quick Response System II Reference Manual
Assignments: QRS II Workshops
3. Urban and Statewide Freight Forecasting (2 weeks)
Readings: Quick Response Freight Manual; Chapter 4, Guidebook on Statewide Travel Forecasting
Assignments: QRFM Workshops; Freight Data Workshops
4. Modeling Travel Choices (1 week)
Readings: AUTDF Notebook, Chapter 2, Introduction to Logit Modeling; Chapter 6, Mode Choice Modeling
Assignments: Binary Logit Analysis Workshop, Mode Choice Workshop
5. Advanced Trip Generation and Trip Distribution Modeling (1 week)
Readings: AUTDF Notebook, Chapter 4, Trip Generation; Chapter 5, Trip Distribution
Assignments: Trip Generation Analysis Workshop; Multimodal Trip Distribution Workshop
6. Automobile Availability and Time of Day (1 week)
Readings: AUTDF Notebook, Chapter 7, Trip Assignment; Chapter 8, Time of Day Modeling
Assignments: Automobile Availability Workshop; Time-of-Day Workshop
7. Midterm Examination
8. Multipath Transit Assignment and Seminars (1 week)
Readings: AUTDF Notebook, Chapter 7, Trip Assignment
Assignment: Multipath Transit Assignment Workshop
9. Elastic Demand Traffic Assignment and Seminars (1 week)
Readings: AUTDF Notebook, Chapter 7, Trip Assignment

Assignment: Integrating Model Steps: Distribution and Assignment Workshop

10. Extensions to Traffic Assignment (Area Split and Dynamic Traffic Assignment) and Seminars (1 week)
Readings: TBA
Assignment: TBA
11. Land Use Forecasting and Seminars (1 week)
Readings: Spatial Variations in Traffic
Assignment: Land Use Model Workshop
12. Trip Table Estimation from Ground Counts and Seminars (1 week)
Readings: TBA
Assignment: TBA
13. Calibration\Validation and Seminars (1 week)
Readings: FHWA Calibration Manual, AUTDF Notebook, Chapter 11
Assignment: Validation Workshop
14. Final Exam

Project

Each student must participate in an individual or group (no more than three students) project relating to an advanced method of travel forecasting. The project must demonstrate the application of a method, validate a method, review the literature related to a method or create a workshop that teaches a method.

Seminar

Each student must prepare and present a seminar topic related to methods of travel forecasting. A seminar topic can be an extension of material already presented in the class or can be about something not already covered. Seminars may contain hands-on workshop exercises.

Project and Seminar Due Dates

Seminar Proposal: February 12, 2003

Project Proposal: February 26, 2003

Seminar Presentation: TBA

Project Report: May 7, 2003

Communications

If you have an e-mail account off-campus, be sure to have your UWM e-mail forwarded there. This can be done at <http://www.uwm.edu/IMT/>. The class reflector is

ce792@uwm.edu. A considerable amount of information will be conveyed by e-mail throughout the semester.

Grading

The assignments and exams will be weighted as follows:

Midterm Exam	15%
Workshops	20%
Seminar	10%
Project	25%
Final Exam	25%
Participation	<u>5%</u>
Total	100%

Proof of completing workshops must be turned in on the Wednesday following the assignment. There will be a late penalty of 10% for every class session that an assignment or proof of completion is late.

Administrative Policies

Disabilities. If you need special accommodations in order to meet any of the requirements of this course, please contact your instructor as soon as possible.

Religious Observances. Students will be allowed to complete examinations or other requirements that are missed because of a religious observance. You must give your instructor advanced notice of any missed requirements that would be caused by a religious observance.

Comments on Course. Your comments about and criticisms of the course are welcome by the instructor at any time.

Other Administrative Policies. Other policies pertaining to academic misconduct, complaints, grade appeals, sexual harassment, and financial obligation may be found at http://www.uwm.edu/Dept/Acad_Aff/policy/ and Appendix C of the Schedule of Classes.