George Mason University
Graduate Course Approval/Inventory Form

Please complete this form and attach a copy of the syllabus for new courses. Forward it as an email attachment to the Secretary of the Graduate Council. A printed copy of the form with signatures should be brought to the Graduate Council Meeting. Complete the Coordinator Form on page 2, if changes in this course will affect other units.

Please indicate:  __X__ NEW  ______ MODIFY  ______ DELETE

Local Unit:  CEIE  Graduate Council Approval Date:

Course Abbreviation:  CEIE  Course Number:  762

Full Course Title:  Transportation System Planning Models

Abbreviated Course Title (24 characters max.):  Transp Syst Plan Models

Credit hours:  3  Program of Record:  CEIE

Repeatable for Credit?  
___ D=Yes, not within same term  Up to hours
___ T=Yes, within the same term  Up to  hours
X__ N=Cannot be repeated for credit

Activity Code (please indicate):  
X__ Lecture (LEC)  ___ Lab (LAB)  ___ Recitation (RCT)
___ Studio (STU)  ___ Internship (INT)  ___ Independent Study (IND)  ___ Seminar (SEM)

Catalog Credit Format:  3:3:0  Course Level:  GF(500-600)  ___ GA(700+)  _X__

Maximum Enrollment:  20  For NEW courses, first term to be offered:  Fall 2004

Prerequisites or corequisites:
Prerequisites:  CEIE 562 or 660; CEIE 601

Catalog Description (35 words or less)  Please use catalog format and attach a copy of the syllabus for new courses.
Transportation systems analysis; theory, mathematical structure, and applications of transportation planning models; network analysis, network equilibrium, dynamic and stochastic equilibrium models; modal choice analysis, discrete choice models of transportation demand; model estimation and aggregation.

For MODIFIED or DELETED courses as appropriate:
Last term offered:  Previous Course Abbreviation:  Previous number:
Description of modification:

APPROVAL SIGNATURES:
Submitted by:  _Dr. Mark Houck_________________  email: mhouck@gmu.edu__

Department/Program:  ________________________________  Date:  __________________

College Committee:  ________________________________  Date:  __________________

Graduate Council Representative:  ________________________________  Date:  __________________
I. CATALOG DESCRIPTION

A. CEIE 762 Transportation System Planning Models (3:3:0)

B. Prerequisite: CEIE 562 or 660; CEIE 601

C. Catalog Description:

Transportation systems analysis; theory, mathematical structure, and applications of transportation planning models; network analysis, network equilibrium, dynamic and stochastic equilibrium models; modal choice analysis, discrete choice models of transportation demand; model estimation and aggregation.

II. JUSTIFICATION

Course necessity: The current graduate level CEIE courses in transportation planning are CEIE 562, Urban Transportation Planning, and CEIE 560, Public Transportation Systems. These courses emphasize topics needed by entry level transportation planning practitioners, and only introduce the basics of transportation modeling theory. Advanced M.S. students and Ph.D. students need a course that delves into the theory of the current and emerging generation of transportation planning models. The course developer has taught a similar course at three other research universities, with excellent results.

Relationship to other courses: This course builds upon the introductory transportation planning topics covered in CEIE 562, and the system analysis and modeling techniques covered in CEIE 601 and its prerequisite course, CEIE 605.

III. APPROVAL HISTORY

A. Approved by the Civil, Environmental & Infrastructure Engineering Department on May 5, 2004
B. Approved by the IT&E Graduate Studies Committee on
C. Approved by the IT&E Dean on

IV. SCHEDULING

Time of Initial Offering: This course will be offered for the first time in Fall 2004, and approximately every three years thereafter.

Existing Faculty With Expertise in Subject Area
CEIE faculty members Michael Bronzini and Mohan Venigalla

V. COURSE OUTLINE

1. Fundamentals of Transportation Systems Analysis
2. The Urban Transportation Modeling System
3. Trip Distribution Theory
4. Link Performance Functions; Traffic Assignment Techniques
5. Optimization Algorithms
6. Equilibrium Assignment Models
7. Stochastic and Dynamic Equilibrium
8. Discrete Choice Models
9. Model Estimation Methods
10. Model Aggregation and Transferability
11. Nested Models; Model Systems

Course Requirements and Grading

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<thead>
<tr>
<th>Requirement</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Homework Problems</td>
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<td>Term Project</td>
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<tr>
<td>Paper Review/Presentation</td>
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<td>Final Exam (Take Home)</td>
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