

**GEORGE MASON UNIVERSITY**  
**The School of Public Policy**  
**PUBP 712 Policy Systems Analysis and Management Science**  
**Fall 2003**

**Basic Course Information**

Instructor: Wayne D. Perry  
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Meeting: Monday, 7:20 p.m. to 10:00 p.m.  
Room: Arlington, 238  
Office Hours: Tuesday 2:00 to 5:00 p.m. or by appointment

**Prerequisites**

PUBP 704 or equivalent

**Required Texts**

Eppen, Gary D., F.J. Gould, L. Schmidt, "Quantitative Concepts for Management: Decision Making Without Algorithms," Third Edition, Prentice Hall, 1988.

Quade, E.S., "Analysis for Public Decisions," Third Edition, revised by Grace M. Carter, Prentice Hall, 1989.

**Required Computer Software**

T.B.A.

**Recommended Text**

Gramlich, Edward M., "A Guide to Benefit-Cost Analysis," Second Edition, Waveland Press, 1990.

**Reference Text**

Bronson, Richard, "Theory and Problems of Operations Research," Schaum's Outline Series, McGraw-Hill, Latest Edition.

**Description and Objectives**

This course introduces students to analytical models and systems analysis, which can be applied to support decisions. The primary emphasis will be to understand the techniques of management science/ operations research for economic analysis and public decision-making. The mathematical details of the algorithms used to solve the models will not be emphasized except as they contribute to understanding the reliability and validity of these methodologies. Through case studies, home work, and computer solutions students should gain in an appreciation of when, where and how to use the models. Finally, students will demonstrate their understanding of these techniques by applying them to a term project on a government program or public policy system.

## **Requirements**

The student's performance will be based on (1) class participation, homework and case assignments. (2) mid-term examination, (3) final examination, and (4) term project paper. Each of these four components will contribute equally, 25 percent, toward the final grade.

## **COURSE OUTLINE**

### Topic/ Readings

Introduction to Modeling and Policy Analysis Eppen, et. al., Chapters 1-2, Quade, Chapters 1-3

Optimization Models and Economic Analysis Eppen, et. al., Chapters 2-3, Quade, Chapters 4-5

Linear Programming (LP), Eppen, et. al., Chapters 5-4

Graphical and Algebraic Formulation, Quade, Chapters 6-8

Special LP Models: Eppen, et. al., Chapter 4, Transportation and Assignment

### Mid-Term Examination

### Project Proposals

LP Solutions, Eppen, et. al., Chapter 6, (Computers/Simplex Method), Appendix A

Policy Interpretations, Quade, Chapters 9-10

Sensitivity Analysis and Duality, Eppen, et. al., Chapters 6-7, Quade, Chapters 11-12

Multiple Policy Objectives and Goal Programming, Eppen, et. al., Chapter 10, Quade, Chapters 11-12

Integer Programming, Eppen, et. al., Chapter 11

### Project Papers

### Final Examination