

## **FOMGT 353 – Introduction to Management Science**

Spring 2003

Professor Anna Nagurney

*Office:* SOM 316

*Phone:* 545-5635

*Class Time:* Monday and Wednesday, 8:40-9:55am,

*Room:* SOM 108

*Office Hours:* To be announced in class

*TAs:* Dmytro Matsypura – [dmatsypura@som.umass.edu](mailto:dmatsypura@som.umass.edu)

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### Course Description and Syllabus

This course is an introduction to the basic theory underlying Management Science and Operations Research. It focuses on linear programming, the fundamental concepts, and algorithms. Applications drawn from different functional areas of business will also be presented. In particular, the course will cover a variety of applications of management science in the areas of finance, marketing, and production such as capital budgeting, optimal sales allocation, and scheduling and distribution. Special cases of linear programming problems, such as the transportation problem and assignment problems will also be studied.

*Required Text:* An Introduction to Management Science, tenth edition, Anderson, Sweeney, and Williams, 2003.

### *Outline of Topics to be Covered:*

1. Introduction  
Evolution of Management Science and the Modeling Process
2. Linear Programming  
Introduction  
Graphical Method
3. Some Applications of Linear Programming
4. The Simplex Method
5. Sensitivity Analysis
6. Integer Programming and Applications

7. The Hitchcock Transportation Problem  
Initiation Techniques  
Balanced and Unbalanced Transportation Problems  
The MODI Method
8. The Assignment Problem  
Balanced and Unbalanced Transportation Problems  
The Hungarian Method
9. Network Models  
Applications
10. Network Project Planning Techniques  
The Critical Path Method (CPM)  
Project Evaluation and Review Technique (PERT)

There will be homework assignments given regularly throughout the class.  
In addition, there will be two exams and a final examination.

*Grading Policy:*

Homework: 20%  
2 Exams: 50%  
Final Exam: 30%