GEORGE MASON UNIVERSITY
Department of Systems Engineering and Operations Research

OR 441/MATH 441 - Operations Research I – SPRING 2008
Monday & Wednesday 1.30 pm- 2.45 pm, LH 2
Professor Roman A. Polyak

Office: Science and Technology II, Room 127; (703) 993-1685; fax: (703) 993-1521
Office Hours: Wednesday 4:00pm-6:00pm or by appointment; E-mail: *rpolyak@gmu.edu*
Text: ***Wayne.L.Winston, Operations Research Applications and Algorithms, Fourth Edition***, ***Thomson, Brooks/Cole2003.***

Course Summary: This course will introduce the basic mathematical ideas and methods of Deterministic Operations Research. We will discuss modeling real life problems, the basic concepts of Linear Programming (LP), and methods for solving LP including transportation, assignment and max-flow problems We are going to discuss briefly some concepts of nonlinear optimization and their applications. There will be weekly homework assignment and a project, which requires modeling real life problems using MPL language.

Grading: 20% homework; 35% midterm exam; 10% computational project; 35% final exam

Course Schedule

Weeks	**Topics**
1	Introduction to OR. Mathematical modeling of real life problems.
2	Linear Programming, geometry of LP, basic linear algebra tools for solving LP.
3	Simplex method
4	More on simplex method
5	Sensitivity in LP
6	Duality in LP
7	The transportation problem
8	**MIDTERM** (The transportation problem is not on the Midterm)
9	Networks and network optimization
10	Integer and combinatorial optimization
11	Branch and bound method
12	Unconstrained optimization
13	Nonlinear constrained optimization
14	Interior Point Methods in LP
15	Review
	FINAL MAY 7th, 2008

This course assumes some knowledge of linear algebra and calculus, which we will review in process of developing the course.