

ISE 544/444
Applications of Mathematical Programming
Fall 2003

Credit Hours: 3/3, **Prereq:** None/ISE 441& Math 211, **Call Number:** 06216/06215

Description:

Formulation and solution of various mathematical programming models. Topics include linear programming, integer programming, and mixed-integer programming. Various solution algorithms will also be discussed. Focusing on particularly manufacturing applications.

Sessions:

TTh 12:10pm-1:30pm, Stocker Center 198.

Instructor:

Dr. Gürsel A. Süer, Room 274, Stocker Center

Phone: (740) 593-1542

E-mail: suer@bobcat.ent.ohiou.edu

Office Hours:

TTh 1:30pm-3:00pm or by appointment.

Textbook:

Wayne Winston, Operations Research, Applications and Alg., Duxbury Press, 4th Ed., 2004.

Course Objective:

To prepare students to recognize and formulate various problems by using different mathematical programming methods. To introduce algorithms available to solve those models. To provide an understanding of sensitivity analysis and its importance.

After the course, students will be able to recognize, formulate, solve and analyze various problems, apply the methods in a real setting and interpret the results and use computer programs to solve the models.

Computer Usage:

Student may use spreadsheet (Excel Solver) to solve some homework problems. Software is available in Ohio University and ENT computer labs (Stocker rooms 127, 264, 267, 305, 308, 414). If you don't have an account, please see the lab administrator in room 264A. Student version of Lindo is available with the textbook. We may still use another professional software for project and some homework problems.

Homeworks:

Homework problems will be assigned every Tuesday and they will be due in one week.

Project:

An individual project is required from each student. The project will focus on mathematical modeling in Health Care Industry.

Progress Report: October 14; Final Report: November 13;

Project Presentation: November 13, 2003

Exams:

Two midterm exams will be given. Exams will be announced at least one week in advance. Students must take the exams on the date and the time scheduled. Exceptions can only be made if the student submits a written request before the exam with valid reasons and if it is approved by the instructor. A bonus question can also be asked in some exams. Final exam is comprehensive.

Readings:

You are recommended to read the material to be covered before the class.

Grading:

Midterm I	20%	<u><i>(Tentatively scheduled for October 9, Thursday)</i></u>
Midterm II	20%	<u><i>(Tentatively scheduled for November 6, Thursday)</i></u>
Final Exam	25%	
Homework	15%	
Project	15%	
Presentation	5%	

Attendance Policy:

Attendance to all sessions is strongly recommended. Students are responsible for all of the material covered in the class.

Academic Misconduct:

No collaboration of any kind is permitted during any of the examinations, homework, or quizzes. All suspected cases will be treated according to the University Policy as stated in the Catalog and the Student Handbook.

Tentative Schedule:

1.	September 9	Introduction, Chp 9.1
	11	Capital Budgeting, Fixed Charge, Chp 9.2
2.	September 16	Set Covering, Either-or, Chp 9.2
	18	Cellular Manufacturing and Production Planning Applications
3.	September 23	Layout and Location Applications
	25	Assembly Line Balancing and Scheduling Applications
4.	September 30	Piecewise Linear Function, Chp 9.2
	October 2	Solving Integer Programming Models, Chp 9
5.	October 7	Article Presentations
	9	EXAM I
6.	October 14	B&B for IP, Chp 9.3
	16	B&B for MIP, Chp 9.4
7.	October 21	Knapsack Problems, Chp 9.5
	23	Combinatorial Optimization, Chp 9.6
8.	October 28	Combinatorial Optimization, Chp 9.6
	30	Implicit Enumeration, Chp 9.7
9.	November 4	Cutting Plane, Chp 9.8
	6	EXAM II
10.	November 11	HOLIDAY
	November 13	Project Presentations

Final Exam is scheduled on November 20, at 10:10 pm in the same classroom.