

University of Southern California Viterbi School of Engineering
Daniel J. Epstein Department of Industrial and Systems Engineering
ISE 330: Introduction to Operations Research: Deterministic Models
Fall 2007: Syllabus

Personnel	Instructor: Arpi Mardirossian Office Hours: Mon. and Wed. 2:30pm – 3:30pm or by appointment, GER 205 Phone: 213.740.6383 Email: mardiros@usc.edu Teaching Assistant: Hossein Tajalli Office Hours: W 10:00am – 12:00pm, GER 309 Email: tajalli@usc.edu Grader: Eduardo Duarte Arguello Email: duartear@usc.edu
Class Details	MW 3:30pm – 4:50pm in THH 114, Section #31605R
Course Text	“Introduction to Operations Research” by F.S. Hillier and G.J. Lieberman, 8th Edition, McGraw-Hill, 2005
Course Website	www-scf.usc.edu/~ise330/2007 Visit the course website regularly for announcements, assignments, lecture notes and other supplementary material.
Pre-requisite	MATH 225
Course Objectives	This course is an introduction to the principles and the practice of Operations Research, and its role in human decision making. In particular, the course focuses on mathematical programming techniques such as linear programming (the Simplex Method, concepts of duality and sensitivity analysis), network optimization (transportation and assignment problems), and dynamic, nonlinear, and integer programming.
Grading Method	Homework – 40% Midterm – 25% Final – 35% All <u>homework</u> and the <u>midterm</u> will be graded by the Teaching Assistant. No late assignments will be accepted. The <u>midterm</u> will be closed book, but you will be allowed to bring <i>one</i> 8.5x11 cheat sheet. The <u>final</u> will be closed book, but you will be allowed to bring <i>two</i> 8.5x11 cheat sheets. The professor will grade the <u>final</u> and determine your grade at the end of the course.

Schedule

Week	Date	Topic
1	Aug 27	Introduction and Overview (Ch. 1 & 2)
	Aug 29	Linear Programming (Sec. 3.1 – 3.3)
2	Sep 3	LABOR DAY
	Sep 5	Linear Programming Examples (Sec. 3.4 – 3.5)
3	Sep 10	Solving LP Models on a Spreadsheet (Sec. 3.6)
	Sep 12	Setting Up the Simplex Method (Sec. 4.1 – 4.3)
4	Sep 17	The Simplex Method in Tabular Form (Sec. 4.4 – 4.5)
	Sep 19	Adapting to Other Model Forms (Sec. 4.6)
5	Sep 24	Postoptimality Analysis (Sec. 4.7) – <i>Taught by TA</i>
	Sep 26	Foundations of Simplex Method (Sec. 5.1) – <i>Taught by TA</i>
6	Oct 1	The Revised Simplex Method (Sec. 5.2)
	Oct 3	Duality Theory (Sec. 6.1 – 6.2)
7	Oct 8	Primal-Dual Relationships (Sec. 6.3)
	Oct 10	Adapting to Other Primal Forms (Sec. 6.4)
8	Oct 15	Sensitivity Analysis (Sec. 6.5 – 6.6)
	Oct 17	Applying Sensitivity Analysis (Sec. 6.7)
9	Oct 22	Sensitivity Analysis on a Spreadsheet (Sec. 6.8)
	Oct 24	Other Algorithms for Linear Programming (Ch. 7)
10	Oct 29	Midterm Review
	Oct 31	MIDTERM
11	Nov 5	The Transportation Problem (Sec. 8.1)
	Nov 7	The Assignment Problem (Sec. 8.3)
12	Nov 12	The Shortest Path Problem (Sec. 9.2 – 9.3)
	Nov 14	The Maximum Flow Problem (Sec. 9.5)
13	Nov 19	The Minimum Cost Flow Problem (Sec. 9.6)
	Nov 21	The Network Simplex Method (Sec. 9.7)
14	Nov 26	Deterministic Dynamic Programming (Sec. 10.3)
	Nov 28	Probabilistic Dynamic Programming (Sec. 10.4)
15	Dec 3	Integer and Nonlinear Programming (Ch. 11 & 12)
	Dec 5	Final Review

Academic Integrity

Each student is expected to: be responsible for his/her own learning; to solve and write up his/her own solutions; and, to credit all sources of material and collaborators to the formulating of a solution. Plagiarism, the use and passing off of the ideas or work of another as one's own, will be severely punished; see USC's **Academic Integrity Policy**:

You are expected to solve and write up your own homework, or you will be penalized for cheating. You are encouraged to study and to work on assignments and homework together. This includes discussing solution strategies to be used on individual assignments. If you do study or work together on homework, be sure to credit your team of collaborators. However, all work submitted for the class is to be done individually.

All USC students are responsible for reading and following the Student Conduct Code, see www.usc.edu/dept/publications/SCAMPUS/gov/student_conduct_code.html. The USC Student Conduct Code prohibits plagiarism. Some examples of what is not allowed by the conduct code: copying all or part of someone else's work (by hand or by looking at others' files, either secretly or if shown), and submitting it as your own; giving another student in the class a copy of your assignment solution; consulting with another student during an exam. If you have questions about what is allowed, please discuss it with the instructor.

Students who violate University standards of academic integrity are subject to disciplinary sanctions, including failure in the course and suspension from the University. Since dishonesty in any form harms the individual, other students, and the University, policies on academic integrity will be strictly enforced. We expect you to familiarize yourself with the Academic Integrity guidelines found in the current SCampus: www.usc.edu/dept/publications/SCAMPUS. Violations of the Student Conduct Code will be filed with the Office of Student Conduct, and appropriate sanctions will be given.

**Disability
Policy
Statement**

Any Student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to the professor (or to TA) as early in the semester as possible. DSP is located in STU 301 and is open 8:30 a.m. - 5:00 p.m., Monday through Friday. The phone number for DSP is (213)740-0776.