ECONOMICS 172A: Introduction to Operations Research (Part A)

Winter 2011   Lectures: MWF 2:00 – 2:50 pm in RBC AUD
Discussions: F 10 – 10:50 am in Solis 107 & F 11 – 11:50 am in WLH 2001

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Economics 172A is the first course in the two-quarter Operations Research sequence. It covers linear and integer programming. Linear and integer programs are types of mathematical optimization problems. The class will introduce you to the problem, teach you how to formulate economic problems as linear programming problems, teach you how to solve these problems, and teach you how to interpret the solutions to these problems.

Prerequisites:

ECON 100A or 170A; and ECON 120A or ECE 109 or Math 180A or Math 183 or Math 186; and Math 20F. Note that credit is not allowed for both ECON 172A and MATH 171A.

Lectures and Problem Sessions:

You are responsible for all the material in the lectures and problem sets. Partial notes will be available on the class webpage before each lecture. I recommend that you print these out before hand and fill in the missing information. I'll do my best to avoid typos but you're responsible for the correct material. I want you to understand the material instead of simply memorizing it. If you miss a lecture, borrow someone's notes. Problem Sessions are optional but recommended.

Grades:

Your grade will be determined on the basis of a Project (10%), two Midterm Exams (20% each) and the Final Exam (50%). Alternatively the project will count for 10%; your lower midterm will count for 10%; your higher midterm will count for 20% and your final will count for 60%. Alternatively, still, each midterm will count 20% and the final will count for 60%. The method of weighting that results in the highest grade will automatically be chosen at the end of the quarter.

Exams:

Midterm 1 will be held in class on Monday, January 24th. Midterm 2 will be held in class on Wednesday, February 16th. The final exam will be held on Monday, March 14th from 3:00pm – 6:00pm. If you know in advance that you cannot make an exam, please let me know as soon as possible.

You must get the instructor's permission (in advance if possible) if you miss a midterm. If you miss a midterm for an approved reason the weight for that exam will be placed on the final. If you miss the final exam for a documented, university approved reason (ie., illness, official university trip), you will receive an Incomplete for the class and will need to make-up the exam during the following quarter. If you miss the final exam for another reason (ie., oversleep) you will receive a zero for the exam. No one will be allowed to start an exam after the first person leaves it.

You are only permitted to use pens and pencils, a calculator, a straight edge and a note card during the exams. You may **not** use a graphing calculator. The note card can be any size up to 8.5" by 5.5" for the midterms and up to 8.5" by 11" for the final. It may have handwritten notes on both sides. Typed or mechanically reproduced notes are not permitted. Do **not** attach anything to your note card in any way. You **cannot** sit next to anyone you studied with during an exam.

Project:

You must complete a computer project where you will be asked to solve and analyze a linear program. The project may be completed by groups of one to four people. You may consult with people in other groups but your group must solve the project and write up the analysis on your own. I will report groups whose analyses look overly similar to the Academic Integrity Office.

The project will be due on Friday, February 25th before the start of class. Projects turned in after that time on the 25th will be penalized 10%. Projects turned in on Monday, February 28th will be penalized 30%. No project will be accepted after that time.

Academic dishonesty:

I take academic dishonesty seriously. Any student found guilty of academic dishonesty will earn a failing grade for the course. In addition to this sanction, the Council of Deans of Student Affairs will also impose a disciplinary penalty. For a review of UCSD policy, please see http://www-senate.ucsd.edu/manual/appendices/app2.htm.

Regrade requests:

Regrade requests must be made through a written statement **before** the start of class one week after the exam was first passed back. This deadline is firm! Extensions will only be permitted if you have a documented, university approved reason for missing the entire week after the exam was first passed back. If you request a regrade I may regrade your entire exam and your score could go up, down or stay the same.

Text:

Introduction to Operations Research, 9th Edition, Hillier and Lieberman, McGraw-Hill. I will give references for the 9th edition but other recent editions should also be fine. The material for this course is fairly standard; other Operations Research texts are also likely to be helpful.

Practice Questions:

Practice questions will be available online. We will go over these questions in office hours and in the problem sessions. Your best practice for the exams is to try these questions yourself first.

Preliminary Course Outline:

1. Introduction/Problem Formulation (Ch 1 – 3)

2. Duality Theory and Sensitivity Analysis (Ch 6)

3. Integer Programming (Ch 11)

4. The Transportation and Assignment Problems (Ch 8)

5. Network Optimization Models (Ch 9)

(A more detailed list of the readings is available on WebCT. It contains the relevant sections and section headings. I hope you will be able to follow the readings if you use a different version of the textbook.)

Note: Monday, January 17th is Martin Luther King Day and Monday, February 21st is President's Day. We will not have class on either day.