ECONOMICS 172A: Introduction to Operations Research (Part A) Fall 2020

Instructor: Herb Newhouse (hnewhouse@ucsd.edu) Course webpage: https://canvas.ucsd.edu/
Lectures: MWF 12:00 – 12:50 pm Discussions: W 2:00 – 2:50 pm & 3:00 – 3:50 pm

TAs: Miles Berg (mlberg@ucsd.edu) and Songyu He (soh038@ucsd.edu)
The instructor and TA office hours will be held online. Further information will be posted on Canvas.

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; 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.

Planned structure:

The topics covered in this course will be presented in a hybrid format, with flexible use of the classroom time and lectures delivered online. The first lecture will be primarily organizational and administrative. I will also provide you with quick overview about the material we will cover during the second lecture.

Before each lecture, I will ask you to watch the appropriate parts of podcasts from former classes. During that time, I encourage you to fill in the incomplete PowerPoint notes that will be available on Canvas.

At the start of each lecture, I will briefly review the material that was covered in the podcast. During this review you will have the opportunity to ask questions. You will then be given problems to work. You will have the opportunity to ask a TA or me for help with the problems. We will then go over the problems and finish with a quick overview about the material we will cover during the next lecture.

Lectures, discussion sections and review sessions will be recorded.

Grading:

My prediction of how I will assess you in this course is:

Grades are based on completing a weekly checklist (5%), a week two use of technology quiz (2%) and exams (93%). The weekly checklist is on Canvas. Your score will be based on the percentage of weekly checklists you complete. Your lowest two weeks will be dropped. There will be four exams. Your lowest score will be dropped.

Note: **If you miss a weekly checklist or exam because of illness, your score for that assignment will be a zero. That assignment will use up one of your drops for that category.** I suggest treating all assignments as if they will count towards your final grade.

Exams will be held during our normal class or final exam times. Midterm 1 will be held on Friday, October 23rd. Midterm 2 will be held on Monday, November 9th. Midterm 3 will be held on Wednesday, November 25th. The final exam will be held on Thursday, December 17th during some time period between 11:30 am and 2:30 pm. If you know in advance that you cannot make an exam, please let me know as soon as possible.

You are only permitted to use pens and pencils, a straight edge and a **single** note sheet during each exam. Calculators are **not** permitted. The note sheet can be any physical size up to 8.5” by 11”. It may **only** have handwritten notes on both sides. Typed or mechanically reproduced notes are not permitted. Do **not** attach anything to your note sheet.

While I will do what I can to keep to the predicted assessments for this course, the evolving situation may make it necessary for me to make changes.

Academic dishonesty:

I take academic dishonesty seriously. Any student found guilty of academic dishonesty will most likely 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.

We will likely use Zoom/Respondus Monitor for proctoring this quarter. These programs use video and audio recording or other personal information capture for the purpose of facilitating the course and/or test environment. UC San Diego does not allow vendors to use this information for other purposes. Recordings will be deleted when no longer necessary. However, if cheating is suspected, the recording may become part of the student's administrative disciplinary record. Finally, I reserve the right to give an oral test if I feel it is necessary to uphold academic integrity.

Regrade requests:

Regrade requests may be submitted via Gradescope during the weeklong regrade period. The regrade period will probably begin a day or two after the exam results are made available to the class. Please do not contact the instructor or any of the TAs regarding the grading of an exam or the grading for the course before the regrade period begins. If your TA agrees with your request, your score for that question will be corrected. If your TA disagrees with your request, you will lose 1 point for each midterm question and 2 points for each final exam question.

Text:

Introduction to Operations Research, 10th Edition, Hillier and Lieberman, McGraw-Hill. I will give references for the 10th 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.

Problem Sets:

Problem sets will be available online. We will go over these questions in office hours and in the discussion sections. 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 will be given with each set of notes and posted on Canvas.)