

Syllabus: Economics 172C – Operations Research (Spring 2004)

Instructor: Wolfram Schlenker
Office: Economics, Room 224
Office Hours: Tuesdays 4-5:30pm
Email: wschlenker@ucsd.edu
Class Web Page: <http://econ.ucsd.edu/~wschlenk/econ172C>
Lecture: Tuesday, Thursday 9.30am-10.50pm (Solis Hall, Room 102)

Teaching Assistants:

Jeffrey Lin Economics, Room 122 (jelin@econ.ucsd.edu)
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Kevin Sheppard Economics, Room 117 (ksheppar@econ.ucsd.edu)
Office Hours: Check web page for updates on office hours.

COURSE DESCRIPTION:

This is the third course of the three-quarter sequence in Operations Research. The common theme in this class is how to characterize and optimize systems that evolve over time and are interlinked, i.e., the state of a system in the next period depends both on the state in this period and the action that was taken. We will start out by examining **Inventory Problems**, first in a deterministic and then a probabilistic setting. We will learn when and how much to order to satisfy demand. Second, we will examine **Markov Chains**, a special class of probabilistic systems that allows us to determine how a system evolves in the long run. Third, **Dynamic Programming** offers solution techniques for problems where the payoffs in subsequent periods depend on the action taken today, i.e., we pay close attention to the fact that all of our actions are intertwined. Finally, **Queuing Theory** will introduce a new class of problems, where people enter and leave a system and we want to examine how long they spend in the system.

PREREQUISITES:

You should be comfortable with linear algebra, basic microeconomics, and the operation of a spreadsheet computer program, as well 172A. In order to enroll in the class you must have the requirements listed in the UCSD catalog.

READINGS:

Lecture Notes: I will post lectures notes at the end of each week. All material on the exams will be either covered in class or be covered in the lecture notes/assigned readings.

Textbooks: In case you'd like to read more about a problem or see it presented differently, I recommend two optional textbooks that some of you might have already:
Operations Research by Winston (4th Edition)
Introduction to Operations Research by Hillier and Lieberman (7th Edition)

EXAMS:

1st Midterm: Thursday, April 22nd (in class)
 2nd Midterm: Thursday, May 13th (in class)
 Final: Thursday, June 10th: 8:00-11:00am

GRADING:

The course grade will be the average of your grades from the midterms (20% each), the three required problem sets (10%) and the cumulative final (50%). I take the academic honor code very seriously and will report any violation to the Dean's office.

PROBLEM SETS:

There will be six problem sets, three of which will be graded, while the other three are designed to give you more opportunities to practice the material. The required problem sets are due at the beginning of class. If you can't make it to class, drop them in the class folder in Room 245, Sequoyah Hall. Note that I will not accept late problem sets out of fairness to others.

OUTLINE:

Below is the course outline. As we go along, I put up the required readings on the web page and some of my lecture notes.

Dates	Topic	Winston (4 th Ed)	Hillier & Lieberman (7 th Ed)
Week 1	Deterministic Inventory Models	15	19
Week 2	Probabilistic Inventory Models	16	19
Week 3+4	Markov Chains	17	16
4/22	Midterm 1		
Week 5-7	Dynamic Programming	18+19	11
5/13	Midterm 2		
Week 8-10	Queuing Theory	20	17
6/10	Final		

HELPFUL HINTS:

Get into the habit of checking the course home page regularly for assignments, due dates, answer keys, announcements, and readings complementing the material covered in the text (Note: You can only access the links to Journal articles if you have a UCSD IP address or set up a proxy server)

Finally, do not hesitate to ask questions, either in class or outside the class. If you do not understand something, speak up – chances are someone else is confused as well. If a question arises outside of class, go and talk to one of the teaching assistants who might give you another (and better) explanation or come to my office hours.