# Syllabus: Economics 172C – Operations Research
# (Fall 2003)

| | |
|---|---|
| Instructor: | Wolfram Schlenker |
| Office: | Department of Economics, Room 224 |
| Email: | wschlenker@ucsd.edu |
| Class Web Page: | http://econ.ucsd.edu/~wschlenk/econ172C |
| Lecture: | Monday, Wednesday, Friday, 12-12.50pm (Peterson Hall, Room 102) |
| Section: | Friday, 4-4.50pm (Peterson Hall, Room 103) |
| Office Hours: | Wednesday, 2-3.30pm, Friday 4-5.30pm |

**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. **Markov Chains** allow us to characterize how the states of certain probabilistic systems evolve over time. **Dynamic Programming** offers solution techniques for problems where the payoffs in subsequent periods depend on the action taken today. **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:**

| | |
|---|---|
| Textbook: | Operations Research by Winston (4th Edition) |
| Alternative Books: | Operations Research by Winston (3rd Edition) |
| | Introduction to Mathematical Programming by Hillier and Lieberman (2nd Edition) – only covers Dynamic Programming, but some of you might have this book from 172A |

**EXAMS:**

| | |
|---|---|
| 1st Midterm: | Wednesday, October 22nd (in class) |
| 2nd Midterm: | Friday, November 14th (in class) |
| Final: | Monday, December 8th. 11:30-2:30pm |

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, come to my office hours. (Please don't call me at home, since I am never there.)

**GRADING:**
The course grade will be the average of your grades from the problem sets (10%), midterms (20% each) 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 AND SECTION:**
All 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.
There is no teaching assistant assigned to this class. I will therefore only offer a section if there are questions about the lecture or one of the problem sets. Otherwise I will have office hours during the section time.

**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 (4th Ed) | Winston (3rd Ed) | Hillier & Lieberman |
|---|---|---|---|---|
| 9/26-10/20 | Inventory Models | 15+16 | 16+17 | |
| | Markov Chains | 17 | 19 | |
| 10/22 | Midterm 1 | | | |
| 10/24-11/12 | Dynamic Programming | 18+19 | 20+21 | 10 |
| 11/14 | Midterm 2 | | | |
| 11/17-12/5 | Queuing Theory | 20 | 22 | |
| 12/8 | 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)

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, come to my office hours. (Please don't call me at home, since I am never there.)