ECON 4838-005
MICROCOMPUTER APPLICATIONS IN ECONOMICS
Fall 2006

CLASSROOM LOCATION: ATLS 104 (use Excel 2003 for Mac)
CLASS DAYS/TIME: TR 5:00-6:15

INSTRUCTOR: Professor Frank S. T. Hsiao
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OFFICE HOURS: TR 1:10-2:40
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OBJECTS: The main object of this course is innovative uses of the personal computer in economic analysis and in model building techniques. Students will acquaint themselves with the nature and properties of economic models by trial and error through individualized, computer generated exercises. The course contents are divided into five parts:

Part I Economic Static and Comparative Static Analyses with MS Excel,
Part II Basic Statistics, Finance, and Matrices with Excel,

Previous knowledge of microcomputers or software is not required. However, students should have enough time to practice and familiarize themselves with the computer and the software package within a short period of time. This takes constant effort and great determination.

THE SOFTWARE PROGRAM: The software program we use is Microsoft Excel 2003 for Mac. It is installed on the hard disk of the Laptops in the classroom.

The reason we use Excel is simple. It is practical and widely available. We have been using spreadsheets programs in this class since 1986: VisiCalc, Lotus 1-2-3, Quattro Pro, and now Excel, depending on the most popular spreadsheet program of the time. As shown in the reference section below, we have demonstrated that the spreadsheet program is an excellent tool for computer assisted instruction (CAI) in economics and statistics. Unlike a packaged learning program, students can learn economic and statistical concepts and methods by actually writing the formulas directly on spreadsheets. However, no programming knowledge and skill, like BASICS, C+, etc., are required.

On the other hand, many students find that the spreadsheet program is easy to learn and use, as compared with software packages like TSP, RATS, SPSS, the commands of which are oftentimes confusing, idiosyncratic, and easy to forget. They also find that Excel is useful in daily life (balancing the budget, doing financial planning, etc.), and helps them easier to get a job in business and government (Excel is required in the Business School).

FACILITIES: The computers we use are laptops with Office XP Professional for Mac. The class will be held in the new ATLAS Building, Room 104. Students can borrow Laptops for use in the classroom. There are 25 Laptops in the room, each with a wide-screen color graphic monitor. Software programs are installed on the hard disk drive.

Excel is also installed in the microcomputers located in the Economics Building Room 7 and Engineering Center. They are also available in Business, Room 104 and 107, Norlin Library Rooms 310 and M350. There are about 30 computing sites throughout the campus. The Excel program is installed in most of the sites. When they are not in use by classes, the facilities are available for individuals.

Reference books and periodicals on Excel (and other spreadsheet programs) are available at the Math/Physics Library, the Business Library, and the Boulder Public Library. There are only a few changes in Excel commands since Excel 98 was published. Hence, references books for other versions of Excel may also be useful.

COURSE SCHEDULE

No.	Week	Chapter	Title
			I. Basic Economic Analysis
1	8/29	1	Total Revenue, Total Cost, and Profits - Excel Worksheets
2	9/05	2	Static Analysis in Economics: Market models and Keynesian Models - Excel Graphics
3	9/19	3	Comparative Static Analysis: Microeconomics and macroeconomics - Name that Range!
			II. Statistics
4	9/26	4	Some economic and statistic functions and regression analysis-equations and formulas
	9/28		**First Mid-term Exam - 100 points (20%)**
5	10/03	5	Random numbers and frequency distributions - large data base The probability,uniform and normal distributions
6	10/10	6	Mortgage calculation - optimal decision models The future and present value problems with or without annuity
7	10/17	7	Price Indexes - sums and products Laspeyres, Paasche, Edgeworth, Divisia price indexes
8	10/24	8	Vectors and Matrices - linear economic models Linear economic policy and input-output models
9			**III. Optimization**
	10/31	9	Production and utility functions and optimization problems - 3D graphics, Oligopolistic competition
	11/02		**Second Mid-term Exam - 100 points (20%)**
			IV. Large Data Base
10	11/14	10	The state of the world - sorting, filtering, subtotaling, pivoting
11	11/28	11	Online resources - text import wizard
	12/05	12	Summary of the semester - flow charts and slides What have we learned so far?
			V. Dynamics
13	12/12	13	Business cycle models: Samuelson-Hicks models - linked cells
14	12/19	14	Chaos: The butterfly effect - very large data set
	FINAL EXAM		**Comprehensive (40%)**

4. If you use disks, hand in the test disk one class before the test day (Tuesday). The test disk

REFERENCES ON GAME THEORY

Bierman, H. Scott and Luis Fernandez, *Game Theory with Economic Applications*, Addison-Wesley, 1993.

Binmore, Ken, *Fun and Games, A Text on Game Theory*, D. C. Heath, 1992.

Dorfman, R., Paul A. Samneson, and Robert . Solow, *Linear Programming and Economic Analysis*, McGraw-Hill, 1958.

McKinsey, J.C.C., *Introduction to the Theory of Games*, McGraw-Hill, 1952.