Introduction to Econometrics, Econ 220 - Section 2

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Office Hours: Tuesdays 2:30-4:20p

Scheduled Class Time and Organization: Class will meet twice a week for lecture: *TTh* from 10:30a-Noon, Fagin Hall (Nursing Education Building, NEGB), Room 111.

Course Description: This course is designed to introduce students to econometric techniques and their applications in economic analysis and decision making. The main objective of the course is to train the student in (i) handling economic data; (ii) quantitative analysis of economic models with probabilistic tools; (iii) econometric techniques, their application as well as their statistical and practical interpretation; (iv) implementing these techniques on a computer.

The course focuses on practical and conceptual issues involved in the substantive applications of econometric techniques. Estimation and inference procedures are formally analyzed for simple econometric models and illustrated by empirical case studies using real-life data. The course covers linear regression models, simultaneous-equations models, discrete choice models and univariate time series models. Estimation and Inference is conducted using least squares and likelihood based techniques. Students are required to apply the estimation and inference techniques in a series of problem sets. EVIEWS will be used for computer-based calculations.

Prerequisites: Economics 101, 102, and 103; Math 104 and Math 114 or Math 115. Prior knowledge of EVIEWS is not required.

Course Web Page: We will use the black-board software. You can log-in from *http://courseweb.libary.upenn.edu*.

Course Text:

Stock, James and Mark Watson (2006, 2nd Edition): *"Introduction to Econometrics"*. Addison Wesley, HB139.S765 2006. (The book will be available in the Penn Bookstore).

You can access the EVIEWS software on the computers in the UDAL computer lab in the first floor of the McNeil Building. You can also purchase a student version of EVIEWS through the Penn Bookstore.

Course Requirements:

- **Problem Sets [1/3]**: There will be 8 problem sets, assigned during the semester. The problem sets are designed to give the students the opportunity to review and enhance the material learned in class. Solutions must be submitted on the specified due dates. Each problem set will be graded on a scale from 0 to 10. Late submissions are penalized with -1 point per day. **Note:** *Problem Sets will be posted on blackboard.*

- **Midterm Exam [1/3]**: *Tuesday, October 28, 2008*, closed books and notes, in class.

- **Final Exam [1/3]**: *To be given on the date scheduled in the University Calendar for final exams*, closed books and notes.

There will be no make-up examination for the mid-term. If a student is excused from the midterm exam (e.g. illness), his or her final exam will be weighted 70%. If a student is excused from the final exam, a make-up exam is to be taken during the designated make-up week, usually at the beginning of the following semester.

Introduction to Econometrics – Course Outline

1 Introduction to Econometrics

(i) What is Econometrics? (S&W Chapter 1)

(ii) Review of Probability (S&W Chapter 2)

(iii) Review of Statistics (S&W Chapter 3)

2 Linear Regression with One Regressor

(S&W Chapters 4, 5)

(i) Introduction to Regression Analysis

(ii) OLS Estimation of a Regression Model

(iii) Hypothesis Testing, Confidence Intervals

(iv) Heteroskedasticity

(v) Prediction

3 Multiple Regression Analysis

(S&W Chapters 6, 7)

(i) Omitted variable bias

(ii) Multiple Regression Model: perfect multicollinearity, estimation, hypothesis tests, confidence intervals, F-test, adjusted R^2

(iii) Danger of using too many regressors

(iv) Model Selection Criteria

4 Nonlinear Regression Functions

(S&W Chapter 8)

5 Simultaneity - Correlation between Regressors and Disturbances

(S&W Chapter 12)

(i) Instrumental Variable Estimation

(ii) Simultaneous Equation Models

6 Panel Data Analysis

(S&W Chapter 10)

7 Regression with a Binary Dependent Variable

(S&W Chapter 11)

8 Introduction to Time Series Regression and Forecasting

(S&W Chapter 14)