

ECO 392M.2
ECONOMETRICS I
INTRODUCTION TO ECONOMETRIC THEORY

P.W. Wilson

Spring, 2002

Class location and time: BRB 2.136, Tue. and Thu., 2:00pm–3:30pm

Office: BRB 3.130

Office hours: 3:45–4:45 Tue. and Thu., or by appointment

Email: wilson@eco.utexas.edu

Required Text:

- W.H. Greene, *Econometric Analysis*, Upper Saddle River, NJ: Prentice-Hall, Inc., 2000. McGraw-Hill Book Co., 1997.

Recommended Texts:

- J. Johnston and J. DiNardo, *Econometric Methods*, New York: McGraw-Hill Book Co., 1997.
- G.G. Judge, R.C. Hill, W.E. Griffiths, H.Lütkepohl, and T.C. Lee, *Introduction to the Theory and Practice of Econometrics*, New York: John Wiley & Sons, 1988.
- P. Kennedy, *A Guide to Econometrics*, Cambridge, MA: The MIT Press, 1998.
- P.A. Ruud, *An Introduction to Classical Econometric Theory*, New York: Oxford University Press, 2000.

Additional Course Materials: I will eventually provide notes, old exams, and perhaps other materials on a course web page; you will (eventually) be able to find a link to the course web page by going to my home page at

<http://eco.utexas.edu/faculty/Wilson>

and clicking on the link that I will provide there.

Course Objectives: This course is the first in a sequence of graduate econometrics courses required for Ph.D. students in economics. The course deals primarily with fully parametric, linear estimation. Homework assignments will provide opportunities for students to gain hands-on experience in working with real economic data. The homework assignments will hopefully reinforce the concepts discussed during class.

I will make reading assignments in class. Students should review material from the previous class as well as any reading assignments before each class.

Requirements: Students are expected to have successfully completed the department's graduate course on introductory probability and statistics, or an equivalent course. Students should have a working knowledge of matrix algebra as well.

Course Grade Determination: Students will have the following opportunities to demonstrate their abilities:

Homework	10 percent
Midterm exam	30 percent
Final exam	60 percent

I expect students to work individually on homework assignments; however, I encourage you to consult with each other in working the homework assignments. Although I encourage mutual exchanges of ideas, copying someone else's work is not permitted.

Grades will be assigned in accordance with policies adopted by the Economics Department Graduate Studies Committee in spring, 1996. In addition to letter grades, + and – symbols will be used and recorded by the Department (pluses and minuses will not count in calculation of students' GPAs by the university). Assigned grades will indicate performance as follows:

- A+* Extraordinary performance (rarely given).
- A* Good performance.
- A–* Satisfactory performance; performance level that would yield a “Pass” on comprehensive exams.
- B+* Performance near the margin; close to the minimum performance level required to pass comprehensive exams.
- B* Weak performance; will require intensive study to pass comprehensive exams.
- B–* Poor performance; well below the level needed to pass comprehensive exams.
- C* Failing grade.

Please note that homework submitted late will receive a grade of zero. Similarly, all students must take the midterm and final exams. In the event of a serious medical problem, other arrangements will be made after sufficient evidence of a serious medical problem is provided. To avoid possibly unpleasant outcomes, students are advised to make such arrangements before missing an exam.

Office Hours: My office hours are shown above. If you need to see me at other times, I will be happy to meet with you. Please bear in mind, however, that I have several other responsibilities, and drop-in visits outside my posted office hours are an enormous distraction. A better, alternative approach is to ask me about an appointment after class. I will be happy to meet with you.

You may also visit my Teaching Assistant, who will be able to answer many of your questions. I will provide details in the first class.

Course Outline

- I. Introduction
- II. The Bivariate Regression Model
 - A. the statistical model
 - A. least squares estimation
 - B. classical assumptions
 - C. properties of estimators
 - D. Gauss-Markov theorem
 - E. statistical properties of LS estimators
 - F. statistical inference
 - G. goodness-of-fit
- III. Matrix Algebra
- IV. The Multivariate Regression Model
 - A. the statistical model
 - B. least squares estimation
 - C. statistical properties of LS estimators
 - D. statistical inference
 - E. goodness of Fit
- V. Maximum Likelihood Estimation
- VI. Hypothesis Testing within the Multivariate Regression Model
 - A. basic approaches
 - B. the restricted LS estimator
 - C. tests of structural change
- VII. Generalized Least Squares
- VIII. Violations of the Classical Assumptions
 - A. heteroskedasticity
 - B. autocorrelation
 - C. misspecification
- IX. Data Problems
 - A. multicollinearity
 - B. missing observations
 - C. measurement error
 - D. grouped data
 - E. outliers, *etc.*
- X. Lagged Independent Variables
 - A. introduction
 - B. finite distributed lags
- XI. Lagged Dependent Variables (LDV)
 - A. autoregressive linear model

- B. LDV models with autocorrelated errors
- C. estimation with autocorrelated errors

XII. Models with Multiple Equations

- A. seemingly unrelated regressions
- B. simultaneous equations models

XIII. Limited Dependent Variables

- A. discrete choice models
- B. count data models
- C. truncation
- D. censoring