

Oregon State University
AREC/ECON 525: Econometric Methods

Winter 2007
Course Guidelines

Professor

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Lectures

Tuesday and Thursday 11 am-12:20 pm, **BALLARD 118**.
Computer Lab Session: Friday 1-1:50 pm, **MCC 201**.

Office Hours

Gopinath: Monday and Wednesday, 3-4.30 pm. Other times by appointment.
Wang: Wednesday and Friday, 2.00-3.00 pm.

Prerequisites

AREC/ECON 523 or AREC 599 or equivalents.

Course requirements:

4 Problem sets	25% (5%, 6%, 7%, 7%)
Final problem set/paper	10%
Midterm	30%
Final	35%

Grading Policy

Will be discussed in-class on Jan. 9th.

OSU policies with regard to academic dishonesty, disruptive behavior and disabilities will be strictly followed.

Textbooks

- W.H. Greene, *Econometric Analysis*, 5th edition, Prentice Hall (required).
E.R. Berndt, *The Practice of Econometrics*, Addison-Wesley (required).
Davidson, R. and J.G. McKinnon. *Econometric Theory and Methods*. Oxford University Press (highly recommended).
W.E. Griffiths, R.C. Hill and G.G. Judge, *Learning and Practicing Econometrics*, Wiley, (optional).
P. Kennedy, *A Guide to Econometrics*, 5th edition, MIT Press (recommended).

Background

Greene will be the main textbook for this course. It is assumed that students have a good background in math and statistics (AREC/ECON 523, AREC 599, ECON 424/524 and/or STAT 521). If students find the topics in Greene difficult, Griffiths, Hill and Judge may be of help. The latter explains similar concepts at a lower level. Kennedy book is descriptive and provides a good intuitive explanation of various econometric topics. Davidson and McKinnon's text is similar to that of Greene, but technically better with more integration of topics.

Problem sets will emphasize the course objective - *basic theory & applied econometrics*. Materials in Berndt, Greene and similar texts will serve as the basis for problem sets. Problems will be both analytical and applications of econometric procedures to real data. The final problem set/paper will require students to analyze a data set and interpret the results. Here, students must decide on model specification, estimation procedure and statistical tests, unlike in problem sets.

Lab session will cover the necessary computer skills required for the course and review (graded) problem set materials. For the computer-based problems, we will use SAS-IML. Students are discouraged from using "canned" packages (e.g., SAS/ETS).

Course Outline

1. The Classical Multiple Linear Regression Model

- A. Assumptions of the Model
Greene, 2.1-2.4
- B. Least Squares Regression and Goodness of Fit
Greene, 3.1-3.6
- C. Finite Sample Properties of the Least Squares Estimator
Greene, 4.1-4.6
- D. Basic Statistical Inference
Greene, 4.7-4.8
- E. Multicollinearity Problem, Missing Observations, and Regression Diagnostics
Greene, 4.9-4.10

2. Inference and Prediction

- A. Testing Restrictions
Greene, 6.1-6.3
- B. Nonlinear Restrictions
Greene, 6.5
- C. Prediction
Greene, 6.6-6.7

3. Functional Form, Structural Change and Specification Analysis

- A. Binary Variables
Greene, 7.1-7.2
- B. Nonlinearity in Variables
Greene, 7.3
- C. Structural Break and Model Stability
Greene, 7.4-7.6
- D. Specification Analysis
Greene, 8.1-8.2
- E. Model Selection
Greene, 8.3-8.5

4. Large Sample (Asymptotic) Properties of the Least Squares Estimator

Greene, 5.1-5.3

5. Nonspherical Disturbances

- A. Nonspherical Disturbances: Introduction
Greene, Chapters 10
- B. Heteroskedasticity
Greene, Chapter 11
- C. Autocorrelation
Greene, Chapter 12

6. Other Topics

- A. Instrumental Variable Estimation and Measurement Errors
Greene, 5.4, 5.6
- B. Nonlinear Regression
Greene, Chapter 9

Suggested Readings

Chapters 9 through 14 of *Learning and Practicing Econometrics* by Griffiths, Hill and Judge, cover most of the topics, but at a lower level with more explanation of results and examples.

Chapters 1 through 7 of *Econometric Theory and Methods* by Davidson and McKinnon cover most of the topics at a level similar to that of Greene.