

**Econ 309-01
Econometrics
Spring 2004**

Instructor: Yanqin Fan, CL 206, Yanqin.fan@vanderbilt.edu
Course Time: Tuesdays and Thursdays, 11:00 --- 12:15 pm, CL 209
Office Hours: Wednesdays, 1:00 --- 3:00 pm, or by appointment

TA: Ye Cai, Ye.cai@vanderbilt.edu
Office Hours: Tuesdays, 5:30 --- 7:30 pm; Thursdays, 5:30 --- 7:30 pm, Buttrick 201
Tutorial Sessions: Thursdays, 4:30 --- 5:30 pm, CL 209

Course Description: This course is designed for first-year Economics Ph.D. students. The basic methods, modern econometric methods, and theory are covered. The intention is that the material will provide a foundation for applied research in economics.

The course prerequisites are Econ 300 and 307, or equivalent. Familiarity with probability, statistics, and matrix algebra is assumed.

Course Requirements: Class assignments will be passed out approximately every week. These assignments will include both problem solving and computer tasks. The computer exercises must be done in E-Views. The assignments will be graded by the TA, and will be reviewed in the tutorial sessions. Questions regarding computers and software should be directed to the TA.

There will be two exams, a mid-term and a final. The mid-term exam will take place from 4:30 to 6:30 pm on Thursday, March 18, 2004. The grading for the course will be as follows: Assignments: 30%; Midterm: 30%; Final: 40%. Class participation is required.

Textbooks: Fumio Hayashi, Econometrics
Jeffrey Wooldridge, Econometric Analysis of Cross Section and Panel Data

Course Outline:

1. Preliminaries
 - 1.1 Matrix Algebra
 - 1.2 Probability
 - 1.3 Maximum Likelihood
2. Method of Moments Estimation
3. Multivariate Regression
4. Functional Form
5. NonLinear Regression
6. Feasible GLS
7. Generalized Method of Moments
8. Empirical Likelihood
9. Endogeneity

10. The Bootstrap
11. Univariate Time Series
12. Multivariate Time Series
13. Limited Dependent Variables
14. Panel Data

Some major textbooks and resources in econometrics:

1. Alternative textbooks:

- Arthur S. Goldberger, *A Course in Econometrics* (1991)
- William H. Greene, *Econometric Analysis, 5th Edition* (2003)
- Paul A. Ruud, *An Introduction to Classical Econometric Theory* (2000)
- James Davidson, *Econometric Theory* (2000)
- Russell Davidson and James G. MacKinnon, *Estimation and Inference in Econometrics* (1993)

2. Advanced Econometrics:

- Handbook of Econometrics*, Volumes I-V
- James Davidson, *Stochastic Limit Theory* (1994)
- Takeshi Amemiya, *Advanced Econometrics* (1985)

3. The Bootstrap:

- Peter Hall, *The Bootstrap and Edgeworth Expansion* (1992)
- Bradley Efron and Robert J. Tibshirani, *An Introduction to the Bootstrap* (1993)
- A.C. Davison and D.V. Hinkley, *Bootstrap Methods and their Application* (1997)

4. Panel Data:

- Cheng Hsiao, *Analysis of Panel Data* (1986)
- Badi Baltagi, *Econometric Analysis of Panel Data* (2001)
- Laszlo Matyas and Patrick Sevestre, eds., *The Econometrics of Panel Data* (1996)

5. Time Series:

- Clive W.J. Granger and Timo Terasvirta, *Modeling Nonlinear Economic Relationships* (1993)
- James D. Hamilton, *Time Series Analysis* (1994)
- Soren Johansen, *Likelihood-Based Inference in Cointegrated Vector Autoregressive Models* (1995)
- Philip Hans Franses and Dick van Dijk, *Non-Linear Time Series Models in Empirical Finance* (2000)

6. Nonparametrics:

- Wolfgang Hardle, *Applied Nonparametric Regression* (1990)
- Adrian Pagan and Aman Ullah, *Nonparametric Econometrics* (1999)

7. Limited Dependent Variables:

- G.S. Maddala, *Limited-Dependent and Qualitative Variables in Econometrics* (1983)
- Christian Gourieroux, *Econometrics of Qualitative Dependent Variables* (1991)
- A. Colin Cameron and Pravin K. Trivedi, *Regression Analysis of Count Data* (1998)