

ECONOMETRICS II—ECON 7023

Spring 2016
Class Time: TR 12:05-13:25
Classroom: Old CE 310
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Professor: Haizheng Li
Office: Room 310, Old CE BLD
Office Hours: TR 16:30-18:00 or by app.
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COURSE DESCRIPTION

This is the second course in the Ph.D. econometrics sequence. Students are assumed to have known regression analysis before taking this class. This course will focus on cross-section and panel data analysis. It will cover both theory and applications, and the approach to applications will be built on econometric theory.

The objective of this course is to provide students with a deeper understanding of econometric skills. Differing from the Master's econometrics II, this Ph.D. level course adopts a bottom-up approach, by connecting seemingly unrelated econometric techniques with asymptotic theory.

TEXTBOOK

--Jeffery M. Wooldridge, *Econometric Analysis of Cross Section and Panel Data*, The MIT Press, latest Edition (required).

--A. Colin Cameron and Pravin K. Trivedi, *Microeconometrics--Methods and Applications*, Cambridge University Press, 2005 (recommended).

HOMEWORK AND COMPUTER ASSIGNMENT

Homework/computer exercises will be assigned regularly. Stata will be used in this class. You can go to the textbook web site to download data. *HOMEWORK TURNED IN LATE WILL NOT BE ACCEPTED.*

TERM PAPER

Students are required to write a complete research paper. The paper should apply the techniques learned in this class and use real world data. The term paper requirement is to collect data to do an independent, original and in-depth research project. Students are encouraged to treat the term paper as a start of their dissertation or research work.

Proposal presentation	March 29	Proposal due (15%)	March 31
Final Presentation (25%)	April 26	Final paper (60%)	April 28

EXAMS AND OTHER IMPORTANT DATES

February 25	Exam I
March 16	Last day to drop individual courses with a grade of "W"
March 17	TA class review
March 21-25	Spring break week
April 21	Exam II

NO MAKE-UP EXAM WILL BE GIVEN.

NO GRADE CHANGES ONE WEEK AFTER TEST/ASSIGNMENT RETURN.

COURSE GRADE

Homework	15%	Term paper	20%
Exam I	25%	Exam II (comprehensive)	40%

TENTATIVE COURSE OUTLINE

- 1) Single-Equation Model and OLS (W, Ch. 4-5)—2-3 lectures
 - a) Asymptotics of OLS
 - b) Proxy variable approach to omitted variables
 - c) Random coefficient models
- 2) IV Estimation (W. Ch. 5-6)—3-4 lectures
 - a) IV estimator
 - b) 2SLS and its Asymptotics
 - c) Asymptotic Efficiency of 2SLS
 - d) Hypothesis testing with 2SLS
 - e) Weak instruments
 - f) Nonlinear in Endogenous Variables (W. Ch. 9.5)
- 3) Other Topics on OLS and 2SLS (W. Ch.4-6)—2-3 lectures
 - a) Testing Over-identifying restrictions, endogeneity, and heteroskedasticity
 - b) Control Function approach to endogeneity
 - c) Indicator approach for omitted variables
 - d) Correlated random coefficient models
- 4) Generalized Method of Moments (CT, Ch. 6, W. Ch.8)—2-3 lectures
 - a) Asymptotics
 - b) Optimal GMM
- 5) Estimating System of Equations by OLS and GLS (W. Ch. 7)—2-4 lectures (optional)
 - a) System OLS
 - b) System GLS
 - c) System FGLS
- 6) Linear Panel Models (W. Ch. 10)—3-4 lectures
 - a) Linear Panel Data Model (W. Ch. 7.8)
 - b) Random Effects Methods
 - c) Fixed Effects Methods
- 7) Linear Panel Models—Extension (W. Ch. 11)—4-5 lectures
 - a) Random Effects Instrumental Variable Methods
 - b) Fixed Effects Instrumental Variable Methods
 - c) Hausman and Taylor—Type Models
 - d) GMM estimation of linear panel data model (CT. Ch. 22)
 - e) Models with lagged dependent variables (Arellano-Bond estimator) (CT. Ch. 22)
- 8) Binary Response Models (W. Ch. 15, optional)
 - a) Continuous and binary endogenous explanatory variables
 - b) Probit and Logit models for panel data