

**SYLLABUS (Final Version)**  
**Bavarian Graduate Program in Economics**  
**Frontiers in Econometrics: July 27-31, 2009**  
**A. Colin Cameron, University of California - Davis**

**GOAL**

This course presents econometrics methods used in linear and nonlinear regression modelling. The course covers the major estimation methods - least squares, instrumental variables estimation, maximum likelihood and generalized method of moments - and their application to cross-section and panel data. Additionally an introduction to time series will be provided.

**ORGANIZATION**

The daily schedule is:

**9.00 - 10.30:** First lecture

**10.30 - 10.45:** Break

**10.45 - 12.15:** Second lecture

**12.15 - 14.00:** Lunch

**14.00 - 16.30:** Problem Set and Reading

**16.30 - 17.30:** Solutions to problems

**17.30 - 18.00:** Further lecture

**COURSE OUTLINE**

**Day 1:** (A) Linear Regression: OLS and GLS; (B) Asymptotic methods.

Ordinary least squares regression and feasible generalized least squares.

Asymptotic methods summary.

**Day 2:** (A) Linear panel data models; (B) Linear IV / GMM.

Instrumental variables estimation. Generalized method of moments estimation defined.

Estimation of fixed and random effects models in short panels.

**Day 3:** Limited dependent variable models.

Binary choice models – logit and probit – in some detail.

Briefer treatment of multinomial models, Tobit and sample selection models.

**Day 4:** Nonlinear Regression: MLE, NLS and nonlinear GMM.

General theory for m-estimators in nonlinear models.

**Day 5:** Time Series Regression

Emphasis on stationary time series. Brief discussion of nonstationary.

## COURSE MATERIAL

Slides for the lectures, Stata programs, data sets and exercises are posted at the course website <http://cameron.econ.ucdavis.edu/bgpe2009>.

Familiarity with ordinary least squares estimation of the linear regression model and matrix algebra is necessary. To aid students who have gaps in preparation a problem set and associated brief lecture notes is available at the course website. All course participants must attempt the problem set before the first day of lectures, to ensure possession of the necessary background for a course that covers a lot of material.

The course covers methods and their application using Stata, and course exercises will include analysis using Stata.

## TEXTS

Many graduate-level texts cover most or all of the material in this course. It is assumed that you have access to one of these. I follow most closely the first book.

- Cameron, A. C. and P. K. Trivedi (2005), *Microeconometrics: Methods and Applications*, Cambridge University Press.
- Davidson, R. and J. G. MacKinnon (2004), *Econometric Theory and Methods*, Oxford University Press.
- Greene, W. G. (2003, 2007), *Econometric Analysis*, 5th or 6th edition, Prentice-Hall.
- Wooldridge, J. M. (2002), *Econometric Analysis of Cross Section and Panel Data*, MIT Press.

Additionally, a useful source for Stata is

- Cameron, A. C. and P. K. Trivedi (2009), *Microeconometrics using Stata*, Stata Press (also available online through CRC Press).