

**Economics 342**  
**Intro to Econometrics**  
SPRING 2009

**Instructor:** Shakeeb Khan

**Office:** SS-221b

**Phone:** 660-1873

**E-mail:** shakeebk@duke.edu

**Class Web Page:** <http://www.econ.duke.edu/shakeebk/Teaching/E342.html>

**My Office Hours:** W, 3:00 PM- 4:00 PM.

**Preceptor:** Marcelo Ochoa

**Preceptor Office Hours:** TBA

**Lecture time and location:** M, W, 1:15 PM - 2:30 PM, 111 Social Sciences.

**Recitation time and location:** T, 6:15 PM- 7:05 PM, 111 Social Sciences.

**Required Textbooks:** :

- Hayashi, F. (2000) *Econometrics*, Princeton, NJ: Princeton University Press.

**Other Textbooks (not required):** - Greene, W. H. (1997) *Econometric Analysis*, Upper Saddle River, NJ: Prentice Hall

- Hamilton, J.D. (1994) *Time Series Analysis*, Princeton, NJ: Princeton University Press

**Software Package:** GAUSS for Windows or Matlab.

**Grading:** There will be (roughly) weekly assignments, a midterm and a final examination. The dates of the midterm and final exam will be announced shortly.

**Scheme:** The grading scheme is:

- Assignments : 10% Midterm: 30% Exam : 60%

### Course Objectives/Description

Economics 342 is the second semester of the first year sequence in econometrics. The course is decidedly different from 341 in the sense that there will be less focus on the basic topics like Generalized Method of Moments (GMM) and its special cases. Instead we will cover more advanced topics such as panel data, hypothesis testing with extremum estimators, computational methods, unit roots, cointegration.

Most of the course will follow Hayashi closely. The more specialized topics will follow the other references listed below.

### Course Outline

1. **Review: Multiple Equation GMM:** Orthogonality conditions and identification; multiple equation GMM defined; asymptotic theory; relation to single equation models; widely used models FIVE, 2SLS, SUR; implications of homoskedasticity;  
Reading: 4.1-4.5.
2. **Panel Data:** Error-components models; fixed effects estimators; random vs. fixed effects.  
Reading: 5.1-5.2.
3. **Estimation and Testing in Nonlinear Models:** Trinity: Wald, LM, LR.  
Reading: 7.1-7.4
4. **Computational Methods-Optimization:** Numerical optimization (G-N), simulation based methods.  
Reading: 7.5.
5. **Time Series Analysis:** modelling serial correlation; ARMA processes; Vector Autoregressions; HAC estimation; unit-root econometrics: estimation and testing; cointegrated systems: estimating and testing;  
Reading: 6.1-6.3, 9.1-9.3, 10.1-10.2., Hamilton, 2-3.