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**SS 2005**

## **Advanced Econometrics 2**

### **Course Dates:**

Monday 10.00-12.00, Tuesday 12:00-14.00

### **Course Description**

This course provides an up-to-date presentation of econometric methods for the analysis of cross-sectional data and panel data at the graduate-level. The course will discuss commonly used inference methods for linear and nonlinear specifications, including linear and nonlinear regression models, Maximum Likelihood estimation, instrumental variables regression, GMM estimation, and (Quasi-)Maximum Likelihood estimation, and qualitative and limited dependent variable models. The course covers the basic asymptotic distribution theory for nonlinear estimators. In the accompanying exercise sessions, the participants will practice the use of these methods using the econometric package TSP.

### **Course Outline**

- 1. Introduction**
- 2. Basic Tools**
  - 2.1 Matrix Algebra
  - 2.2 Statistics and Probability Theory
  - 2.3 Asymptotic Theory
- 3. The Linear Regression Model and its Extensions**
  - 3.1 Classical Linear Regression Model
  - 3.2 Heteroscedasticity, Autocorrelation, Generalized Least Squares
  - 3.3 Linear Panel Data Models
- 4. IV Estimation and Generalized Method of Moments**
- 5. Nonlinear Least Squares and nonlinear GMM**
- 6. Maximum Likelihood**
- 7. Limited Dependent Variables and Qualitative Response Variables**

## **References:**

### **Main References:**

**Wooldridge, J.M.** (2002): *Econometric Analysis of Cross Section and Panel Data*. Cambridge, MA: MIT Press (see also: <http://mitpress.mit.edu/Wooldridge-EconAnalysis>).

**Greene, W.** (2003): *Econometric Analysis*, 5<sup>th</sup> Ed., International Edition, Prentice Hall.

### **Additional References:**

**Amemiya, T.** (1985): *Advanced Econometrics*. Cambridge, MA: Harvard University Press.

**Johnston, J. and J. DiNardo** (1997): *Econometric Methods*, 4<sup>th</sup> Ed. New York: McGraw-Hill.

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

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

**Mittelhammer, R.C., G.G. Judge, and D.J. Miller** (2000): *Econometric Foundations*. Cambridge, MA: Cambridge University Press.

**Ruud, P.A.** (2000): *An Introduction to Classical Econometric Theory*. New York: Oxford University Press.

## **Grading:**

The grade will be based on 4 graded problem sets including (20%), a midterm (20%), and a written final exam (60%). The midterm will take place on ???. Students in the Ph.D. program will have to take the preliminary exams at the end of the summer semester.

## **Further Information:**

Further references, particularly regarding the application of the methods, will be given in the course. The basic estimation techniques will be implemented in the PC Pool using the econometric package TSP. A student version (TSP GiveWin) can be bought for \$ 100 from TSP International (see [www.tspintl.com](http://www.tspintl.com)).