**ARE/ECN 240A ECONOMETRIC METHODS Winter 2010**

**Instructor:** Professor Óscar Jordà  
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**Class Meets:** T – R, 10 – 11:20am. Room: WELLMAN 115

**Office Hours:** Mondays, 1 – 3pm; Wednesdays 10-11am, or by appointment

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**Office Hours:** Tuesdays and Thursdays, 9-10am

**Textbook:** There are several textbooks used in 240A. I will not follow anyone in particular very closely. However, *Econometric Theory and Methods* by Davidson and McKinnon (Oxford University Press) is a good textbook and will be used by Professor Smith in 240B as well. For this reason, I have selected it to be the textbook for the course. A classic is *Econometric Analysis* by William Greene, which covers far more than we will but the coverage is very terse. It is a bit like looking something up in Wikipedia – it gives you the gist of what you need but it is probably not the book you want to study from if you want to understand things well.

**Assignments:** I plan to have 5 assignments, hopefully involving some computer work as well. The software programs that I plan to use are STATA and GAUSS. You should not be too stressed about this since most of the exercises will involve relatively simple manipulations of programs that I will have prepared for you.

**Grading:** There will be three components to your grade, assignments (30%), midterm (30%) and final (40%).

**Planned Schedule:**

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<td>January 14</td>
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<td>January 28</td>
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<tr>
<td><strong>February 4</strong></td>
<td>Problem Set 1 Due</td>
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<td>February 11</td>
<td>Problem Set 2 Due</td>
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<td>February 25</td>
<td><strong>Midterm</strong></td>
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<td>March 11</td>
<td>Problem Set 3 Due</td>
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<td><strong>March 18</strong></td>
<td>Problem Set 4 Due</td>
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Outline of Topics:

- **Topic 0. Review of Basic Concepts.** Quick review of bivariate regression, estimation, inference and evaluation. Statistical foundations. Basic statistical concepts you should know from 239. Basic matrix algebra you should know.

- **Topic 1. Multivariate Regression: Part I.** Statement of the objective of regression analysis. Basic assumptions. Three approaches: method of moments (MM); ordinary least squares (OLS); and maximum likelihood (MLE). Basic derivations for each of these methods.


- **Topic 3. Inference I.** Elements of a test. Wald, likelihood ratio (LR) and Lagrange multiplier (LM) tests; single and multiple hypothesis testing; asymptotic distribution of common tests.

- **Topic 4. Inference II.** Confidence regions and simultaneous testing procedures. Simulation-based testing. Assessing the size and power of a test with Monte Carlo techniques. The bootstrap.

- **Topic 5. Extensions to the basic framework I.** Heteroskedasticity and autocorrelation – testing and generalized least-squares.


- **Topic 7. Extensions to the basic framework II.** Nonlinear regression. Limited dependent variable regression and applications of MLE.

- **Topic 8. Introduction to Time Series Data.** Introduction to basic concepts. Stationarity. ARMA models.