Instructor: John Hore

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Class Schedule: Thursdays, 6-8.45pm, May 16th – August 22nd, 2012. There are two adjustments to the schedule:

1. There will be no class on Thursday, May 30th. A make-up class will be held on Saturday, June 8th, from 10am-12.45pm
2. There will be no class on Thursday, July 11th. A make-up class will be held on Saturday, June 22nd, from 10am-12.45pm.

We will meet in room 418, which is a computer lab where each student will have a computer to work through the empirical examples along with me.

Blackboard: Please check the Blackboard website for the class often. I will post announcements, lecture notes, papers, and datasets there.

Textbook: The textbook for this class is “Microeconometrics – Methods and Applications” by Cameron and Trivedi (ISBN: 0521848059). It is fairly mathematically advanced, so if you are struggling with the notation, you might find “Mostly Harmless Econometrics” by Angrist and Pischke (ISBN: 0691120358) to be a helpful and more intuitive supplement.

Course Outline: This class is will cover a range of advanced econometric techniques frequently employed in the analysis of individual-level micro data. The class is mainly empirical in nature. We will cover some relevant theory in lectures, but we will focus on applications of this theory, and the lectures will include examples and in-depth discussions of empirical papers that employ the different techniques.

Research Project: In a project that will span the duration of the course, you will take on the role of a researcher or policy analyst and choose a dataset (one among those posted on our course Blackboard site, or with special permission, a dataset of your choosing), and these data will become the basis for the empirical work you will do in this class. Because research projects are often collaborative in nature, you have the option of working in groups of 2. To complete this project, you will:

1. Formulate one or more policy or research questions to address.
2. Explore your data (using descriptive statistics) and identify limitations of your data, refining your research question(s) if needed.
3. Specify hypotheses that you will test empirically.
4. Identify statistical methods appropriate for your data and analysis.
5. Specify statistical models to test.
6. Conduct sensitivity analyses (if appropriate) of alternative model specifications.
7. Interpret the results of your statistical analyses in terms of the research questions and hypotheses you defined at the onset of the study.
8. Make a presentation to your peers of your study findings, including a discussion of your analytical approach.

To undertake this work, it will be essential for you to become skilled in using a statistical processing program such as Stata or SAS. I will cover a basic overview of Stata in Unit 2, but it will be up to you to practice and hone the skills necessary to complete your project. Homework assignments will also help you develop the skills needed to complete your final project. Datasets will be posted on the class Blackboard site, ready to download and use. I encourage you to use one of the provided datasets, which will make it easier for me to provide you with technical assistance.

**Grading and Deadlines:** There will be four homework assignments, each worth 10% of your final grade. I will distribute a rubric that explains what I am looking for in each assignment and how that assignment will be graded, usually about 2 weeks before the due date.

Assignment 1 (due 6/13). The first assignment is a research proposal that identifies the question(s) of interest for your research project, discusses the data source that you will use, and briefly lays out your proposed empirical framework.

Assignment 2 (due 6/27). The second assignment is a literature review for a topic of your choosing. The topic can be the same as your research paper, or it can be a completely new topic.

Assignment 3 (due 7/25). The third assignment is a preliminary draft of your paper that contains some descriptive statistics and preliminary results.

Assignment 4 – (due 8/8). The fourth assignment is a Stata exercise. I will provide you with data and ask you to estimate some models like those we have encountered in class and discuss the results.

The research project described above will constitute 35% of your final grade, while your presentation to me and the class counts for a further 15%. Your final paper will be due on the last day of class.

The remaining 10% will be based on your lecture attendance and participation.
All assignments can be emailed to me prior to 6pm on the due date, or you can hand in a printed copy to me at the start of class. *Please note that all deadlines listed above are hard deadlines and late submissions will receive zero credit.*

**Tentative Schedule:** The course will be taught in units. Some units will be covered in a single week, while others will take two weeks. The corresponding textbook chapters are listed, but since the class is focused on empirical applications, I will supplement the textbook readings with selected papers. I will post the lecture notes and supplemental materials prior to the lectures. It is a good idea to skim the notes and papers before each lecture, then go back and review in more detail after class to reinforce what we covered. During the final class meeting, you will present your research projects to me and the rest of the class.

**Unit 1:** Course introduction, overview of statistical theory and matrix algebra.

**Unit 2:** Introduction to Stata.

**Unit 3:** Microeconometrics overview: data and models (Chapters 2 & 3), Difference-in-Differences estimation.

**Unit 4:** Ordinary Least Squares (Chapter 4).

**Unit 5:** Linear Models Beyond OLS: Generalized Least Squares (GLS), Seemingly Unrelated Regression (SUR), Quantile Regression (Chapter 4).

**Unit 6:** Instrumental Variables (IV) (Chapter 4).

**Unit 7:** Maximum Likelihood and Nonlinear Least Squares Estimation (Chapter 5).

**Unit 8:** Binary Outcome Models – Logit & Probit (Chapter 14).

**Unit 9:** Multinomial Models (Chapter 15).

**Unit 10:** Tobit and Selection Models (Chapter 16).

**Unit 11:** Panel Data (Chapter 21).