Introduction to Econometrics (E470)

Fall 2009 Syllabus

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Class meeting: TR 12:00-1:15 pm  
at **BS 3011**  
Office Hours: TW 2:00-4:00 pm  
and by appointment.

**Course description:** Simply put, econometrics is the social science that uses economic theory, mathematics and statistics to solve economic problems. This class is an introductory course for econometrics. After a review of probability and statistics, we will study two-variable regression analysis (determining the quantitative relationship between one economic variable and another), and then multiple regression analysis (determining the quantitative relationship between one economic variable and two or more other variables). We will learn how to use STATA to do the regression analysis.

In the statistics course (E270) you focused on estimating the mean of a random variable and doing hypothesis tests on the mean, etc. In E470 we will focus on estimating the conditional mean of a random variable (the mean conditioned on the values of other variables, e.g. the mean quantity demanded conditioned on price) and doing hypothesis tests, etc. It is because we are interested in policy—learning the effects of one variable on another—that we must move beyond E270 and learn how to estimate conditional means.

**Prerequisites:** E270 (Statistics) and Math 119 (Calculus).


**Software:** STATA

**Recommended texts:** The following text and software will help you learn a lot more:


   Also useful is:


**Stata/SE 10 Availability:**

1. Social Science Computing Classroom (SSCC) - 4th floor Cavanaugh Hall (CA 436).
2. Economics graduate students room - 5th floor Cavanaugh Hall (CA 534).
3. UITS-maintained Student Technology Labs - BS3000, BS3003, BS3005, IT131, SL070.

*Small Stata for Windows* (plus Getting Started manual); this is the least expensive possibility;
there are more powerful (but also more expensive) options if interested. Purchase through IU’s Stat/Math Sales (smsale@indiana.edu). This is a version of STATA for your PC.

**Grading:**
Your final grade in the class will be determined by the following grading scale.

- **Homework** (30 percent)
- **Midterm** (30 percent)
- **Final** (40 percent)

However, you could also choose the following grading scale with a term paper:

- **Homework** (25 percent)
- **Midterm** (25 percent)
- **Term paper** (20 percent)
- **Final** (30 percent)

**Homework:**
Homework will be assigned on a regular schedule. Students are welcome to discuss the homework with classmates. However, each student has to write his/her own answers. Do not just copy others. Not mentioning it is not just a misconduct, it is not worth doing because eventually you will have to solve the midterm and final exams on your own. No late homework will be accepted.

**Term paper:**
For those who would like to write a term paper for an empirical project, please notify me before November 1 and discuss with me about your plan.

**Exams:**
There will be two midterm exams and one final exam. No excuse other than extreme emergency will be accepted for missing a midterm exam. If an emergency does arise, please email me before the midterm exam to inform me of the problem. In the midterm exams, you will be permitted to bring in a single sheet (two-sided, 8x11) of notes and a calculator; no textbooks, computers, cell phones, iPAQs, iPODs, etc.

**Feedback:**
I highly encourage you to provide me with feedback as we progress through the semester. Good communication is essential to make sure the course runs as smoothly as possible. You can come to my office hour, send emails to me, and leave feedback on my mailbox anonymously. I will give bonus points for those who give me feedbacks based on weekly counts (formula of bonus: (your feedback counts/highest counts in the class)*5, Maximum will be 5 for who give me most feedbacks in your final grade)

**Academic Integrity:**
Indiana University-Purdue University Indianapolis has a Code of Student Conduct, administered by the office of the Dean of Students. This Code sets standards for academic integrity at IUPUI for all undergraduate and graduate students. As a student you are responsible for upholding these standards for this course. It is very important for you to be aware of the consequences of cheating,
fabrication, facilitation, and plagiarism.
Fall 2009 Schedule:

Week 1: Wool. 1.  Review of probability and statistics
Week 2: Wool. 2  Simple Regression Model
Week 3: Lab  Learning stata (CA436, Sept. 15 & Sept. 17)
Week 4: Wool. 3  Multiple Regression Analysis: Estimation
Week 5: Wool. 4.  Multiple Regression Analysis: Inference
Week 6:  Continued from previous week
Week 7:  Midterm (Oct. 13)
Week 8: Wool. 5  Consistency, asymptotic normality, asymptotic efficiency.
Week 9: Wool. 6  Functional form, goodness-of-fit, prediction.
   (Inform me whether you will like to write a term paper by Nov. 1)
Week 10: Wool. 7  Multiple Regression with Qualitative Information.
Week 11: Wool. 8  Errors that are heteroskedastic.
Week 12:  Midterm (Nov. 17)
Week 13: Wool. 15  Instrumental variables estimation.
Week 14: Wool. 15  Continued from previous week.
Week 15:  Reading Week
Week 16:  Final (Cumulative, Dec 17, 1:00-3:00 pm)

“Wool.” refers to the Wooldridge text