

## PPHS 311: Statistics for Public Policy II Course Syllabus: Winter 2015

**Instructor:** Bruce D. Meyer (bdmeyer@uchicago.edu)

**Time and Location:** MW 10:30 – 11:50, Harris School Lecture Hall (Room 142)

**Instructor Office Hours:** M 1:30 – 3:00 pm, Harris School Room 166

### **Description:**

This course is an introduction to econometrics and is a continuation of the empirical methodology core sequence that is intended to follow PPHS 310. The course focuses on multivariate regression methods and their interpretation.

### **Teaching Assistants:**

Scarlett Swerdlow (scarlettswerdlow@uchicago.edu)

Xue Gong (xgong@uchicago.edu)

Esperanza Johnson Urrutia (esperanza@uchicago.edu)

Parul Karna (parul@uchicago.edu)

Santiago Ortega (sreyes88@uchicago.edu)

### **Weekly TA Sessions (check Chalk for changes):**

M 3-4 (Scarlett) 289B

M 5-6 (Xue) 140C

T 12-1 (Esperanza) 289B

W 3-4 (Santiago) 289B

Th 12-1 (Parul) 289A, 140C on Jan. 15

### **TA Office Hours (check Chalk for changes):**

M 4-5 (Scarlett) 289B

T 4:30-5:30 (Esperanza) 289B

T 5-6 (Xue) 140C

W 4-5 (Santiago) 289B

Th 2-3 (Parul) 171

**Assignments and Grading:** The final grade for the course will be a function of the midterm (27%), final (36%), six homework assignments (30%) and one writing assignment (7%). The final will be cumulative. There will be six homework assignments. You may work on the problems with others in the class, but you must turn in your own set of answers and indicate on the first page who you worked with. Your lowest graded homework will count for only half as much as the others. The writing assignment will be explained in more detail during class.

You may **not** use any materials from prior years of this course.

The midterm and the final will both be in class, closed book exams. No cell phones, calculators, etc. will be allowed.

Midterm: Monday, February 9, 10:30 – 11:50 (regular class time)

Final: Monday, March 16, 9:00 – 12:00

I plan to hold an extra review session in preparation for the midterm on Friday, February 6, 3:00-4:20.

**Readings:** There are two useful texts for the course. I suggest you choose one depending on your learning style and background:

*Introduction to Econometrics* (3<sup>rd</sup> Ed.) by James H. Stock and Mark W. Watson (less mathematical, but less well organized)

*Introductory Econometrics: A Modern Approach* (5<sup>th</sup> Ed.) by Jeffrey M. Wooldridge (more systematic, but more mathematical; if you skip over a few more mathematical subsections it is best)

I will draw on both texts for examples.

Other course readings, made available via Chalk, will supplement the text.

**Discussion board:** Students should post questions about the material and clarifying questions about homework assignments on the course discussion board in Chalk.

**Prerequisites:** This course is a continuation of PP310. Knowledge of basic statistics is required.

### Course Calendar

The following calendar is meant as a rough guide. I will do my best to keep the homework, midterm and final dates unchanged. In terms of lecture material, this is the order of the material, but I expect some content to take longer than one lecture, so the dates may change. SW # indicates the chapter number from Stock and Watson. Wd # is the chapter from Wooldridge. Additional readings will be posted on Chalk.

Lecture 0. Review SW chapters 2, 3, 4 and 5

Lecture 1. (Jan. 5) *Course Introduction, Causality, Randomized Control Trials*  
SW 1 (Wd 1)

Lecture 2. (Jan. 7), *Randomized Control Trials (cont.), Bivariate Linear Regression*  
Cullen, Jacob and Levitt (2006), SW 4 (Wd 2)

Lecture 3. (Jan. 12) *Bivariate Linear Regression: properties, testing*  
SW 4, 5 (Wd 2)

Lecture 4. (Jan. 14) *Multivariate Linear Regression, omitted variable bias*  
SW 6, 7.5 (Wd 3)

**Homework 1 Due by 5pm**

No Class January 19, 2015 for MLK Day

Lecture 5. (Jan. 21 10:30-11:50 in Lecture Hall) *Multivariate Regression, properties, interpretation*  
SW 6 (Wd 3)

Lecture 6. (Jan. 26) *Multivariate Regression, testing*  
SW 7 (Wd 4)

Lecture 7. (Jan. 28) *Tools: Functional Forms*  
SW 8 (Wd 6.1, 6.2)

**Homework 2 Due**

Lecture 8. (Feb. 2) *Tools: Heteroskedasticity, Weighted Least Squares, and Binary Dependent Variables*  
SW 11 (Wd 8, 7)

Lecture 9. (Feb. 4) *Tools: Time Series Data*  
SW 14 (Wd 10)  
**Homework 3 Due**

**Extra Review Session: February 6, 10:30 – 11:50**

**MIDTERM February 9 (covers lectures 1 – 8)**

Lecture 10. (Feb. 11) *Problems: Power and Significance and Outliers*  
SW 9 (Wd 9.5)

Lecture 11. (Feb. 16) *Problems: Missing Data and Measurement Error*  
SW 9 (Wd 9.4, 9.5)

Lecture 12. (Feb. 18) Wd. 6.3, 9.1, 16.1, 16.2 *Miscellaneous Specification Issues: Logs or Not, Non-nested Tests, Multiple Hypothesis Testing, Over Controlling, Simultaneity*  
**Homework 4 Due**

**First draft of writing assignment uploaded to Chalk by Friday, February 20 at 5pm**

Lecture 13. (Feb. 23) *Solutions: Natural Experiments*  
SW 13, (Wd 13.1,2) Meyer, Viscusi and Durbin (1995), Meyer (1995)

Lecture 14. (Feb. 25) *Solutions: Regression Discontinuity*  
SW 13 Schmieder, von Wachter and Bender (2012)  
**Homework 5 Due**

Lecture 15. (Mar. 2) *Solutions: Instrumental Variables*  
SW 12 (Wd 15), Angrist and Evans (1998)

Lecture 16. (Mar. 4) *Solutions: Panel Data Strategies*  
SW 10 (Wd 13)

**Final version of writing assignment uploaded to Chalk by Friday, March 6 at 5pm**

Lecture 17. (Mar. 9) *Solutions: Panel Data Strategies (cont.)*  
SW 10 (Wd 13, 14.1)

Lecture 18. (Mar. 11) *Review*  
**Homework 6 Due**

**FINAL March 16 (Monday), 9:00 – 12:00**