

## PPHA 311: Statistics for Public Policy II Course Syllabus: Winter 2017

**Instructors:** Bruce D. Meyer ([bdmeyer@uchicago.edu](mailto:bdmeyer@uchicago.edu)) and Austin Wright ([austin.l.wright@gmail.com](mailto:austin.l.wright@gmail.com))

**Time and Location:** TTh 9:00-10:20, 10:30 – 11:50, 142 (Meyer) 1:30- 2:50 142 (Wright)

**Meyer Office Hours:** W 3:00-4:20 pm, Harris School Room 166

**Wright Office Hours:** TU 3:00 – 4:00 pm, Harris School Room 130C

### **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:**

Pablo Aguirre Holman [pjaguirre@uchicago.edu](mailto:pjaguirre@uchicago.edu)

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### **Weekly TA Sessions will be posted on Chalk**

### **TA Office Hours will be posted on Chalk**

**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 closed book exams. No cell phones, calculators, etc. will be allowed.

Midterm: Friday February 3, 10:00 – 12:00

Final: Tuesday, March 14, 9:00 – 12:00

**Readings:** There are two useful texts for the course. We 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)

We 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 PPHA310. Knowledge of basic statistics is required. The material in Stock and Watson chapters 2, 3, 4, and 5 should be familiar to you already.

### Course Calendar

The following calendar is meant as a rough guide. We will do our best to keep the homework, midterm and final dates unchanged. In terms of lecture material, this is the order of the material, but we 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 1. (Jan. 3) *Course Introduction, Causality, Randomized Controlled Trials*  
SW 1 (Wd 1)
- Lecture 2. (Jan. 5) *Randomized Controlled Trials (cont.), Bivariate Linear Regression*  
Cullen, Jacob and Levitt (2006), SW 4 (Wd 2)
- Lecture 3. (Jan. 10) *Bivariate Linear Regression: properties, testing*  
SW 4, 5 (Wd 2)
- Lecture 4. (Jan. 12) *Multivariate Linear Regression, omitted variable bias*  
SW 6, 7.5 (Wd 3)  
**Homework 1 Due by 5pm**  
(Review pages 1384-1389 of Dube and Vargas (2013) for background on question 4)
- Lecture 5. (Jan. 17) *Multivariate Regression, properties, interpretation*  
SW 6 (Wd 3)
- Lecture 6. (Jan. 19) *Multivariate Regression, testing*  
SW 7 (Wd 4)
- Lecture 7. (Jan. 24) *Tools: Functional Forms*  
SW 8 (Wd 6.1, 6.2)  
**Homework 2 Due by 5pm**
- Lecture 8. (Jan. 26) *Tools: Heteroskedasticity and Binary Dependent Variables*  
SW 11 (Wd 8, 7)
- Lecture 9. (Jan. 31) *Tools: Time Series Data*  
**Homework 3 Due by 5pm**
- Lecture 10. (Feb. 2) Unfinished topics and Midterm Review  
SW 14 (Wd 10)

### MIDTERM February 3 (Friday), 10:00 – 12:00

- Lecture 11. (Feb. 7) *Problems: Power and Significance and Outliers*  
SW 9 (Wd 9.5) Meyer, Viscusi and Durbin (1995)

- Lecture 12. (Feb. 9) *Problems: Missing Data and Measurement Error*  
SW 9 (Wd 9.4, 9.5)
- Lecture 13. (Feb. 14) SW 9.2, 17.5 (Wd. 6.3, 9.1, 16.1, 16.2) *Miscellaneous Specification Issues: Logs or Not, Non-nested Tests, Multiple Hypothesis Testing, Weighted Least Squares, Over Controlling, Simultaneity*  
**Homework 4 Due by 5pm**

- Lecture 14. (Feb. 16) *Solutions: Natural Experiments*  
SW 13, (Wd 13.1, 2) Meyer (1995)

**First draft of writing assignment uploaded to Chalk by Friday, February 17 at 5pm**

- Lecture 15. (Feb. 21) *Solutions: Regression Discontinuity*  
SW 13 Schmieder, von Wachter and Bender (2012)  
**Homework 5 Due by 5pm**
- Lecture 16. (Feb. 23) *Solutions: Instrumental Variables*  
SW 12 (Wd 15), Angrist and Evans (1998), Dube and Vargas (2013)
- Lecture 17. (Feb. 28) *Solutions: Panel Data Strategies*  
SW 10 (Wd 13)
- Lecture 18. (Mar. 2) *Solutions: Panel Data Strategies (cont.)*  
SW 10 (Wd 13, 14.1)

**Final version of writing assignment uploaded to Chalk by Friday, March 3 at 5pm**

- Lecture 19. (Mar. 7) *Post-script on Empirical Examples, Unfinished Topics?*  
**Homework 6 Due by 5pm**
- Lecture 20. (Mar. 9) *Review*

**FINAL March 14 (Tuesday), 9:00 – 12:00**