PPHA 311: Statistics for Data Analysis II
Course Syllabus: Winter 2018

Instructors: Austin Wright (austin.l.wright@gmail.com) and Ingvil Gaarder (ingvil.gaarder@gmail.com)

Time and Location: TTh 9:00 – 10:20, 10:30 – 11:50, 142 (Wrigth) 1:30 – 2:50, 3:00 – 4:20, 142 (Gaarder)

Gaarder Office Hours: TBA, Harris School Room 162

Wright Office Hours: TBA, 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: TBA

Weekly TA Sessions will be posted on Canvas

TA Office Hours will be posted on Canvas

Assignments and Grading: The final grade for the course will be a function of the midterm (25%), final (35%), six homework assignments (30%) and one writing assignment (10%). 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. At the end of the quarter, the lowest problem set grade will be dropped. 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 2, TBA

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

Recommended Textbook: *Introduction to Econometrics* (Updated 3rd Ed.) by James H. Stock and Mark W. Watson

Supplemental Textbook: *Introductory Econometrics: A Modern Approach* (5th Ed.) by Jeffrey M. Wooldridge

Other course readings, made available via Canvas, 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 Canvas.

Prerequisites: This course is a continuation of PPHA310. Knowledge of basic statistics is required. The material in Stock and Watson chapters 2 and 3 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 Canvas.

Lecture 1   (Jan. 4) Course Introduction, Causality, Randomized Controlled Trials
SW 1 (Wd 1)

Lecture 2   (Jan. 9) Randomized Controlled Trials (cont.), Bivariate Linear Regression
SW 4 (Wd 2)

Lecture 3   (Jan. 11) Bivariate Linear Regression: properties, testing
SW 4, 5 (Wd 2)
Homework 1 Due by 5pm

Lecture 4   (Jan. 16) Multivariate Linear Regression, omitted variable bias
SW 6, 7.5 (Wd 3)

Lecture 5   (Jan. 18) Multivariate Regression, properties, interpretation
SW 6 (Wd 3)

Lecture 6   (Jan. 23) Multivariate Regression, testing
SW 7 (Wd 4)
Homework 2 Due by 5pm

Lecture 7   (Jan. 25) Functional Forms
SW 8 (Wd 6.1, 6.2)

Lecture 8   (Jan. 30) Heteroskedasticity and Binary Dependent Variables
SW 11 (Wd 8, 7)
Homework 3 Due by 5pm

Lecture 9   (Feb. 1) Unfinished topics and Midterm Review
SW 14 (Wd 10)

MIDTERM Friday, Feb 2nd.

Lecture 10   (Feb. 6)Problems: Power and Significance and Outliers
SW 9 (Wd 9.5)

Lecture 11   (Feb. 8) Problems: Missing Data and Measurement Error
SW 9 (Wd 9.4, 9.5)

Lecture 12   (Feb. 13) Miscellaneous Specification Issues: Logs or Not, Non-nested Tests, Multiple Hypothesis
Testing, Weighted Least Squares, Simultaneity
SW 9.2, 17.5 (Wd. 6.3, 9.1, 16.1, 16.2)
Homework 4 Due by 5pm

Lecture 13   (Feb. 15) Solutions: Natural Experiments
SW 13, (Wd 13.1, 2)

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

Lecture 14   (Feb. 20) Solutions: Regression Discontinuity
SW 13

Lecture 15   (Feb. 22) Solutions: Instrumental Variables
              SW 12 (Wd 15)
              Homework 5 Due by 5pm

Lecture 16   (Feb. 27)Solutions: Panel Data Strategies
              SW 10 (Wd 13)

Lecture 17   (Mar. 1)Solutions: Panel Data Strategies (cont.)
              SW 10 (Wd 13, 14.1)

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

Lecture 18   (Mar. 6) Post-script on Empirical Examples, Unfinished Topics?
              Homework 6 Due by 5pm

Lecture 19   (Mar. 8) Review

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