

PPHA 313: Advanced Statistics for Data Analysis II Course Syllabus: Winter 2023

Instructor: Bruce D. Meyer bdmeyer@uchicago.edu

Time and Location:

TTH 9:30-10:50 (Section 1) 11:00-12:20 (Section 2)

Office Hours:

Tu 5-6, Weds 4-5

Description: This course is a mathematically based introduction to econometrics and is a continuation of the empirical methodology core sequence that is intended to follow PPHA 312. The course focuses on multivariate regression methods and their interpretation. **This is a fast-paced course and each week's material requires an understanding of the previous' weeks content.** You will need to keep pace with weekly quizzes and problem sets that assess your understanding of material learned in the prior weeks.

I will be using a **flipped classroom model** with students expected to view recorded lectures ahead of time for discussion in class. I will ask students to submit questions ahead of time, and will typically prepare an example or problem for class. Short 15 minute weekly quizzes requiring short answers will be given on Tuesdays at the start of class.

Teaching Assistants:

Angela Wyse, Head TA awyse@uchicago.edu

Phoebe Collins

Bettina Hammer

Updates to office hours and locations will be posted on Canvas Announcements

Weekly TA Sessions:

Friday 9:00-10:20 (Section 1)

Friday 10:30-11:50 (Section 2)

Friday 3:00-4:20 (Section 3)

Core Tutoring Program: Harris offers 10 hours of free tutoring for students enrolled in core classes. Students can get assistance with understanding statistical concepts, reinforcing computational rules, and with coding in Stata or R. Any questions should be directed to HarrisStudentAffairs@uchicago.edu.

Attendance and Zoom: The bulk of your learning will come from three sources: assigned readings, pre-recorded online lectures and slides, and in-class discussions of each lecture's material. When attending class via Zoom, students are expected to mute their microphones and activate their cameras when possible. When we are meeting in person, you will be required to attend the live discussions of each lecture's material that will cover additional examples, allow ample opportunity to ask questions and discuss big-picture topics. Please attend only the section in which you are enrolled. We also encourage you to attend weekly discussion sessions led by the TAs, which will review content from that week's problem set.

Assignments and Grading: The final grade for the course will be a function of eight quizzes (you will count your top 7) (25%), nine homework assignments (40%), a final exam on Monday

or Tuesday, March 6 or 7 (30%), and class participation (5%). In accordance with student requests, I will be using anonymous grading. Thus, homework assignments and quizzes should have your **student number** on them, not your name. **NOTE:** I will be grading on an adjusted Harris Core curve, with a higher share of higher grades than the standard curve, since you are choosing an advanced course.

Homework Assignments: The nine homework assignments will be due on **Wednesday mornings (Monday during finals week)** and will focus on the previous week's content. You are encouraged to form your own homework groups to share approaches (not answers), but each student must write up his/her answer set individually. You must also indicate at the top of your answer sheet the **student numbers** of those in the class you worked with. Write-ups that are materially similar between students will be regarded as cheating and receive zero credit. If you have difficulty finding other students to work with, please send the TAs an email and we can help connect you with a group.

Problem sets are due on the due date and **late problem sets will not be accepted**. We will review the previous problem set in each week's TA session.

Quizzes: There will be eight timed in-class quizzes on Tuesdays. **These quizzes will focus on material covered in the previous week's assigned readings, lecture slides recorded video lectures, and remote or in-class discussion**, but will draw on earlier material as well. For example, the quiz on 1/10 will cover the recorded video lectures on the topics listed under Week 1. The quizzes will be in class and closed book, and cannot be discussed with anyone until after section 2 is over at 12:20pm.

Harris Integrity Policy for Problem Sets Involving Programming Code:

Academic dishonesty will not be tolerated. If you commit plagiarism, you may receive an F and be referred to the Area Disciplinary Committee. All work must be your own.

Do not:

- Show other students your code, or ask for another student's code
- Use prior year's answers for problems or online solutions you might find
- Copy large portions of code from online repositories (e.g., replication code)

Every submission begins with "This submission is my work alone and complies with the 313 integrity policy. Add your initials to indicate your agreement: ___"

How should you collaborate? You can clarify ambiguities in problem set questions, discuss conceptual aspects of problem sets, show output on screen (e.g. a graph or table), and show helpful documentation files.

Readings: The text for the course is *Introductory Econometrics: A Modern Approach* (7th Ed.) by Jeffrey M. Wooldridge. Earlier editions are fine, but I will indicate readings only for the 7th edition—you are responsible for cross-walking the chapters to a different edition.

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

Prerequisites: PPHA312 or an alternative rigorous basic statistics course is required.

Course Calendar

The following calendar is meant as a rough guide. We will do our best to keep the schedule and homework 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. Additional readings will be posted online.

Jan. 3, 5 *Course Introduction, Causality, Randomized Controlled Trials*
Wooldridge Chapter 1

Randomized Control Trials (cont.), Bivariate Linear Regression
Cullen, Jacob and Levitt (2006), Wooldridge Chapter 2

1/3: Quiz 0

Jan. 10, 12 *Bivariate Linear Regression: properties*
Wooldridge Chapter 2

Multivariate Linear Regression, omitted variable bias
Wooldridge Chapter 3

1/10: Quiz 1

1/11: Problem Set 1 Due by 10am

Jan. 17, 19 *Multivariate Regression, testing*
Wooldridge Chapter 4

Asymptotics
Wooldridge Chapter 5

1/17: Quiz 2

1/18: Problem Set 2 Due by 10am

Jan 24, 26 *Scaling, Functional Forms, Residual Analysis, Outliers*
Wooldridge Chapters 6.1, 6.2, 7, Meyer, Viscusi and Durbin (1995)

Power and Significance, Non-nested tests, multiple hypothesis testing
Wooldridge Chapter 6.3, 9.1,

1/24: Quiz 3

1/25: Problem Set 3 Due by 10am

Jan 31, Feb 2 *Tools: Heteroskedasticity and Weighted Least Squares*
Wooldridge Chapters 8

Problems: Missing Data, Measurement Error, Simultaneity
Wooldridge Chapter 9.4, 9.5, 16.1, 16.2

1/31: Quiz 4**2/1: Problem Set 4 Due by 10am**

Feb 7, 9

Binary Dependent Variables
Wooldridge Chapter 7, 17.1

Drop: Discrete and Limited Dependent Variables
Wooldridge Chapter 17, other readings?

Solutions: Natural Experiments
Wooldridge Chapter 13.1, 13.2; Meyer (1995)

2/7: Quiz 5**2/8: Problem Set 5 Due by 10am**

Feb 14, 16

Solutions: Regression Discontinuity
Schmieder, von Wachter and Bender (2012)—Skip Section II (pp. 705-711)

Solutions: Instrumental Variables
Wooldridge Chapter 15, Angrist and Evans (1998)

2/14: Quiz 6**2/15: Problem Set 6 Due by 10am**

Feb 21, 23

Solutions: Panel Data Strategies
Wooldridge Chapter 13

Solutions: Panel Data Strategies (cont.)
Wooldridge Chapter 13, 14.1

2/21: Quiz 7**2/22: Problem Set 7 Due by 10am**

Feb 28, Mar 2

Time Series Data; Unfinished topics
Wooldridge Chapter 10

Putting Everything Together and Doing Empirical Work
Cullen, Jacob and Levitt (2006)

2/28: Quiz 8**3/1: Problem Set 8 Due 10am**

Finals week

Final Exam 3/6 or 3/7**3/6: Problem Set 9 Due by 10am**

Adaptations to COVID (needs to be updated)

Starting week 3, this course is planned as an in-person experience, and students are expected to attend class at the Keller Center, with some exceptions as discussed below. Our practices and expectations include the following:

- We will use seating charts to facilitate any needed contact tracing. During the first two weeks of class, I will pass around a sign-in sheet during each class meeting. On the sign-in sheet, please write your name next to your seat number.
- Students must wear masks properly—covering both nose and mouth—at all times while in the classroom. Students who fail to comply will be reported to the Harris Dean of Students and [UCAIR](#), the University’s incident reporting system for COVID-19 safety matters.
- We ask that students not eat or drink during class.
- Please display your name tent every class so that I can more easily call on you by name.

That said, of course, public health and/or personal health circumstances vary across individual members of the University community and may change abruptly with limited notice. Students, TA’s, and instructors may need to participate remotely for a short time or, in some limited instances, for the entire quarter. To guide expectations and plans, please note the following:

- **If you are experiencing COVID-19 symptoms or are required to isolate, do not come to class!**
 - As soon as possible, contact me or the TA by email if you cannot attend class for this reason. You should not send me medical information / doctors’ notes or the results of any COVID-19 test.
 - Students are expected to abide by the University’s [COVID-19 health requirements](#) AND its specific [Protocol for Addressing Confirmed or Suspected COVID-19 Exposures](#). Note that the Protocol, which addresses self-monitoring, testing, and isolating requirements, represents evolving guidance and is subject to change.
 - Any member of the University community who tests positive for COVID-19 should inform the University contact tracing team at C19HealthReport@uchicago.edu.
 - Students missing class for short spells during the term are encouraged to watch class on Zoom either live or via recordings of class sessions, and otherwise participate in class as fully as possible, health permitting.
- **If I find that I cannot teach in person at some point during the term, I will communicate this as soon as possible to all the relevant stakeholders, including students!**
 - Health permitting, I will teach remotely via Zoom on such occasions.
 - Students can attend class in the Keller Center but would participate via Zoom on such days. Students can also attend remotely from home (or any other location that is devoid of distractions).
 - I will be in touch with the TA, HSIT, and ASA to make sure things work smoothly.

Resources available to students

The University has long offered a comprehensive set of student support services (described [here](#)), including [student health services](#). And in response to the COVID-19 pandemic and associated disruptions, the University has provided links for students via its “Learning Remotely” [website](#); specific resources are listed [here](#). Specifically, instructors may wish to explicitly remind students about available counseling services in particular: *If you or someone you know is feeling overwhelmed, depressed, and/or in need of support, remote counseling services are available. Student Counseling Service (SCS) urges you to attend to your mental wellbeing and to reach out to them for support during these challenging times. All SCS services are covered by the Student Life Fee, and there is no additional cost for students to access their services. See <https://wellness.uchicago.edu/mental-health/student-counseling-service-spring-quarter-faq/>. Students seeking new services/resources can call 773.702.9800 during business hours (Monday–Friday 8:30 a.m.–5 p.m.) and ask to speak with a clinician. **Students needing urgent mental health care can speak with clinicians over the phone 24/7 by calling the SCS at 773.702.3625.***

Similarly, the Harris School itself provides both academic and non-academic support services for students. These resources are described (and links provided) on [this page of the Harris website](#).

Harris School and University of Chicago Policies

For general information see University’s [Student Manual](#) and the [Harris School’s own student policies and regulations](#)

Academic Integrity

All University of Chicago students are expected to uphold the highest standards of academic Integrity and honesty. Among other things, this means that students shall not represent another’s work as their own, use un-allowed materials during exams, or otherwise gain unfair academic advantage.

- The University’s policies regarding academic integrity and dishonesty are described [here](#). It is worth explicitly stating the University’s approach here: “It is contrary to justice, academic integrity, and to the spirit of intellectual inquiry to submit another’s statements or ideas as one’s own work. To do so is plagiarism or cheating, offenses punishable under the University’s disciplinary system. Because these offenses undercut the distinctive moral and intellectual character of the University, we take them very seriously.”
- The Harris School’s student policies are available on the [policies page of our website](#).
 - The *Academic Honesty and Plagiarism* section expresses the main principles.
 - Detailed guidelines for more specialized student work (e.g., problem sets including computer code) are offered in the sub-section titled *Harris Integrity Policy for Problem Sets Involving Code*.
- Harris’s specific procedures for handling suspected violations of these policies are available in the section *Harris Procedures for Allegations of Plagiarism, Cheating, and Academic Dishonesty*.
 - All students suspected of academic dishonesty will be reported to the Harris Dean of Students for investigation and adjudication. The disciplinary process can result in sanctions up to and including suspension or expulsion from the University.

Disability Accommodations

The University's policies regarding students with disabilities are available [here](#). The University of Chicago is committed to ensuring equitable access to our academic programs and services. Students with disabilities who have been approved for the use of academic accommodations by Student Disability Services (SDS) and need a reasonable accommodation(s) to participate fully in this course must follow the [procedures established by the Harris School of Public Policy](#).

Timely notifications are required to ensure that your accommodations can be implemented. Currently registered students are asked to notify the Harris Student Disability Liaison, Eman Alsamara (ealsamara@uchicago.edu) of their access requests by the end of the first week of the quarter. The Harris Student Disability Liaison will work with the student and instructor to coordinate the implementation of student accommodations. *Harris students are not required to submit their accommodations letter to the instructor.* Students from other divisions in the University must submit their accommodations letter to Eman Alsamara (ealsamara@uchicago.edu) in the Harris Dean of Students Office.

Students who are facing extenuating circumstances at any point during the quarter should reach out to their Academic Advisor in the Dean of Students Office for support. If you feel you need accommodations on an ongoing basis, contact Student Disability Services. To contact SDS: website: disabilities.uchicago.edu phone: (773) 702-6000 email: disabilities@uchicago.edu.

Diversity and Inclusion

The Harris School welcomes, values, and respects students, faculty, and staff from a wide range of backgrounds and experiences, and we believe that rigorous inquiry and effective public policy problem-solving requires the expression and understanding of diverse viewpoints, experiences, and traditions. The University and the Harris School have developed distinct but overlapping principles and guidelines to insure that we remain a place where difficult issues are discussed with kindness and respect for all.

- The University's policies are available [here](#). Specifically, the University identifies the freedom of expression as being “vital to our shared goal of the pursuit of knowledge, as is the right of all members of the community to explore new ideas and learn from one another. To preserve an environment of spirited and open debate, we should all have the opportunity to contribute to intellectual exchanges and participate fully in the life of the University.” The Harris School's commitments to lively, principled, and respectful engagement are available [here](#): “The Harris School of Public Policy welcomes and respects students, faculty, and staff from a wide range of backgrounds, experiences, and perspectives as part of our commitment to building an inclusive community. *Fostering an environment that encourages rigorous inquiry and effective public policy problem-solving requires the involvement and understanding of diverse viewpoints, experiences, and traditions.* As a leading public policy school, Harris holds diversity as a core value. That includes not only diversity of opinion, but diversity along a broad spectrum of factors, including race, ethnicity, national origin, gender identity, sexual orientation, ability status, religion, socio-economic background, and social or political belief. Recognizing the value of diversity and inclusion is essential to combating discrimination, addressing disparities, and cultivating ethical and clear-eyed policy leadership.”

Video and Audio Recordings

By attending course sessions, students acknowledge that:

- i. They will not: (i) record, share, or disseminate University of Chicago course sessions, videos, transcripts, audio, or chats; (ii) retain such materials after the end of the course; or (iii) use such materials for any purpose other than in connection with participation in the course.
- ii. They will not share links to University of Chicago course sessions with any persons not authorized to be in the course session. Sharing course materials with persons authorized to be in the relevant course is permitted. Syllabi, handouts, slides, and other documents may be shared at the discretion of the instructor.
- iii. Course recordings, content, and materials may be covered by copyrights held by the University, the instructor, or third parties. Any unauthorized use of such recordings or course materials may violate such copyrights.
- iv. Any violation of this policy will be referred to the Dean of Students.