ECMA 31100: Introduction to Empirical Analysis

University of Chicago, Winter 2022

Lecture: TuTh 2:00PM - 3:20PM via Zoom (Weeks 1+2), SHFE 203 (Week 3 on).

Discussion Section: W 3:30PM - 4:20PM via Zoom (Week 2), HM 130 (Week 3 on).

Instructor: Joseph Hardwick

Office: All meetings will be held via Zoom.

Email: hardwick@uchicago.edu

Office Hours: Via Zoom on Mondays 9:30AM-11:00AM; Thursdays 4:30PM-6:00PM.

Teaching Assistant: Conroy Lau

Email: ccplau@uchicago.edu

Office Hours: Via Zoom on Wednesdays 5:30-7:30PM.

Course Description: This course is an introduction to applied econometrics and builds on tools studied in ECMA 31000. Topics include: Selection on observables, instrumental variables, time series, panel data, discrete choice models, regression discontinuity, nonparametric regression, quantile regression.

Required Readings: My lecture slides and annotations, which will be on Canvas. You will need to attend lectures for worked examples/proofs.

There is no required textbook, but parts of the following are useful references:

- *Probability and Statistics for Economists* (2021) and *Econometrics* (2021) by Bruce Hansen. These textbooks are available for free on Bruce's website.
- *Econometric Analysis of Cross Section and Panel Data* (2010) by Jeffrey M. Wooldridge. This textbook can be read online through the university library.

Grading: The final grade is determined by assignments submitted via Canvas and a final project due Friday Mar 11 at 11:59PM. These assessments will be weighted as follows:

Problem Sets: 70% (There are 4; each counts for 17.5%)

Final Project: 30%

The final letter grade will be determined as follows:

Letter Grade	A	A-	B+	B	B-	C+	C	C-
Overall Score	90	85	80	75	70	65	60	55

Any student scoring higher than the cutoff given above will earn at least that grade in the course. For example, if everyone scores 93% overall, everyone gets an A. Scores may be curved up to the benefit of all students but will not be curved down. You may request Pass/Fail grading no later than Sunday, March 13 at 5PM CT. If you wish to withdraw from the course without a W on your transcript you must do so before Friday, January 28 at 5PM. A withdrawal after this date but before Sunday, March 13 at 5PM will result in a W grade on your transcript. A withdrawal may not be granted after this time except in extenuating circumstances, and you must submit a petition to withdraw with your academic adviser. You cannot switch back to a letter grade after withdrawing or opting for Pass/Fail, so you should discuss the ramifications with your academic adviser before requesting either.

Assignment Policy: Assignments will be made available at the end of the week on weeks 1,3,5,7. They are due two weeks later, Saturdays by 11:59PM (US Central Time), and should be submitted via the Assignments tab on the course Canvas page. Late problem sets will not be accepted. Students are encouraged to work together on problem sets but must submit an individual write up. Submissions should be clearly legible, as no credit is awarded for responses the TA cannot read. Please leave enough space for the TA to annotate your work. Assignments that require coding should include as part of the submission a printout of the code used to generate output required for problem set questions. Submissions should be compiled into a single pdf file no larger than 20MB. Students may use any programming language. MATLAB is available to University of Chicago students at https://www.mathworks.com/academia/tah-portal/university-of-chicago-719588.html. Students may use vLAB to access university software. Off-Campus use requires cVPN.

Final Project: You must submit an original research project by Friday March 11 at 11:59PM via the Assignments tab on the course Canvas page. I will provide more details later in the course.

Accessibility: 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 should follow the procedures established by SDS for using accommodations. Timely notifications are required in order to ensure that your accommodations can be implemented. Please meet with me to discuss your access needs in this class after you have completed the SDS procedures for requesting accommodations.

Phone: (773) 702-6000

Email: disabilities@uchicago.edu

Attendance: ***Note: If, for any reason, the class must be conducted remotely beyond week 2, a modified version of the following policy will be announced on Canvas and appended to this syllabus.***

Lectures and discussion sections in the first two weeks will be conducted via Zoom. Subsequent lectures and discussion sections will be in person, but all office hours will be held over Zoom. Classes and office hours will not be recorded. Please aim to access lectures using the Zoom link provided on the Zoom tab in Canvas 5 minutes before the scheduled class start time. Students will be allowed to enter from the waiting room. Any enrolled student joining late will be admitted if their entry is noticed by the instructor.

Please note that food and drink are not allowed in classrooms. If you are required to miss class because you are in isolation after testing positive for COVID-19, experiencing symptoms prior to obtaining a COVID-19 test, or quarantining, you may inform me of your absence so I can make alternative arrangements for you to keep up with classwork

Course Expectations: Student participation is incredibly helpful to fellow students and the instructor. In addition, students are strongly encouraged to use Canvas discussion boards. Questions and answers posted to these boards will be actively monitored by the instructor, and all participants are encouraged to write and answer questions there.

All participants must follow the requirements set forth in the University's COVID-19 attestation. Any student who is unable to attend class during the Autumn Quarter is expected to adhere to the usual health protocols, including abiding by the University's COVID-19 Health Requirements and Protocols for Addressing Confirmed or Suspected COVID-19 Exposures, which include guidelines for self-monitoring for symptoms. Any member of the University community who tests positive for COVID-19 should inform the University contact tracing team at C19HealthReport@uchicago.edu.

Any concerns over inappropriate PPE usage, physical distancing, cleaning/disinfection, or other COVID-19 related public health concerns should be directed to UCAIR. If there is an emergency, call 773-702-8181 or dial 123 on any campus phone.

Title IX: Faculty, staff, lecturers, teaching assistants, postdoctoral fellows, and all others who have teaching responsibilities in the classroom and/or lab are considered "Individuals with Title IX Reporting Responsibilities", and must report on gender-based discrimination, sexual harassment, sexual abuse, sexual assault, dating violence, domestic violence, or stalking to the University Title IX Coordinators. For more information, see https://harassmentpolicy.uchicago.edu/. See here for an overview of confidentiality options and University resources.

Academic Integrity: Students must abide by the University's policy on academic honesty. Instances of academic dishonesty will be reported to the Office of the Provost for adjudication. Policies specific to assignments and examinations in this class are outlined in the Assignment Policy and Examination Policy above.

Diversity and Inclusion: The University of Chicago believes that a culture of rigorous inquiry demands an environment where diverse perspectives, experiences, individuals, and ideas inform

intellectual exchange and engagement. I concur with that commitment and expect to maintain a productive learning environment based upon open communication, mutual respect, and non-discrimination. All students enrolled this class are and will always be equally welcome. I cannot overstate the value that each individual's contribution brings to lectures, sections, office hours, online discussion boards and the overall quality of this class. Any student who feels unable to participate fully in any class section for any reason should not hesitate to reach out to me. The University does not discriminate on the basis of race, color, religion, sex, sexual orientation, gender identity, national or ethnic origin, age, status as an individual with a disability, protected veteran status, genetic information, or other protected classes as required by law.

Course Schedule

Lecture	Date	Topics	PS Out	PS In
1	Tu, Jan 11	Selection on Observables	–	–
2	Th, Jan 13	Instrumental Variables	1	–
3	Tu, Jan 18	Instrumental Variables	–	–
4	Th, Jan 20	Instrumental Variables	–	–
5	Tu, Jan 25	Instrumental Variables	–	–
6	Th, Jan 27	Instrumental Variables	2	1
7	Tu, Feb 1	Instrumental Variables	–	–
8	Th, Feb 3	Time Series	–	–
9	Tu, Feb 8	Difference in Differences	–	–
10	Th, Feb 10	Difference in Differences	3	2
11	Tu, Feb 15	Panel Data	–	–
12	Th, Feb 17	Panel Data	–	–
13	Tu, Feb 22	Regression Discontinuity Designs	–	–
14	Th, Feb 24	Regression Discontinuity Designs	4	3
15	Tu, Mar 1	Discrete Choice	–	–
16	Th, Mar 3	Discrete Choice	–	–
17	Tu, Mar 8	Non-Parametric Regression	–	–
18	Th, Mar 10	Quantile Regression	–	4
–	**Fr, Mar 11**	**Final Project Due 11:59PM**	–	–