ECON 11020-03: Introduction to Econometrics

Oscar Galvez-Soriano

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Class Hours: TuTh 9:30-10:50am
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Teaching Assistant:
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Course Description

The objective of this course is to introduce students to the practice of econometrics. The course will focus on the use of multiple regression to describe/predict real-world data and, under certain conditions, as a tool to establish causal relations. The course emphasizes all steps of the process of empirical research: data collection, analysis, and presentation (both written and oral). Multiple examples of this process will be discussed, and students will be expected to read and evaluate existing research. Students will apply the techniques discussed in class to a randomly assigned topic. They will write a paper and present results to the class.

Required Materials

I have set up a Canvas course website that contains our textbook ("Piece of Cake" by Pablo Peña), lecture notes, problem sets, and other learning resources.

The following textbooks are not required, but serve as a complement for this class:

- Stock, James H. and Watson, Mark W. (2020). Introduction to Econometrics (Fourth Edition). Pearson.
- Gertler, Paul J., Martinez, Sebastian, Premand, Patrick, Rawlings, Laura B., Vermeersch, Christel M. J. (2016). Impact Evaluation in Practice (Second Edition). Washington, DC: Inter-American Development Bank and World Bank. http://hdl.handle.net/10986/25030

For further references, you may also review the following textbooks:

- Jeffrey M. Wooldridge (2015). Introductory Econometrics: A Modern Approach (Sixth Edition). Cengage Learning.
- Joshua D. Angrist and Jorn-Steffen Pischke (2009). Mostly Harmless Econometrics: An Empiricist's Companion. Princeton University Press.
- Joshua D. Angrist and Jorn-Steffen Pischke (2015). Mastering 'Metrics: The Path from Cause to Effect. Princeton University Press.

Prerequisites

In order to register for this course all students should have completed Econ 10000, Econ 10200, and either Econ 11010/21010 or STAT 22000/23400/24400/24410. Additionally, you must have a good command of high school Algebra, graphical analysis and, preferably, basic knowledge of Calculus. If you do not meet these prerequisites and you choose to take this course, then it is your responsibility to work on your math skills in order to be able to follow the materials taught in this course.

Requirements and Grading

Each student's cumulative score for this course will be based on performance on problem sets and exams, and the class paper with the weights given in the grading scheme below. This cumulative score will then be mapped into a letter grade at the end of the course.

1. Problem sets: four problem sets, with the lowest score dropped (**15%**)
2. Midterm exam. Tuesday, November 4 (**35%**)
3. Paper, due on Friday, December 12 (**10%**)
4. Final exam. December 9 (**40%**)

All grades are final except for correcting obvious grading mistakes. For example, points are added up incorrectly, or obviously correct answers are mistakenly marked wrong. Please bring these to the teaching assistant's attention as soon as possible. For other cases, please discuss questions with the teaching assistant or me.

The following are guaranteed letter grade cutoffs. At the instructor's discretion, cutoffs may be lowered but will never be raised.

Letter Grade	A or A-	B+ or B	B- or C+	C or C-	D+ or D	F
Cum. Score	90	80	70	60	50	<50

Any student scoring higher than the cutoff given above will earn at least that grade in the course. You may request Pass/Fail grading no later than Monday, December 8 at 5PM CT. If you wish to withdraw from the course without a W on your transcript you must do so before Friday, October 10 at 5PM CT. A withdrawal after this date but before Monday, December 2 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 advisor. You cannot switch back to a letter grade after withdrawing or opting for Pass/Fail, so you should discuss the ramifications with your academic advisor before requesting either.

Problem Sets: Problem sets will be assigned on Canvas and must be submitted on Gradescope by the time of the discussion section (7:30 pm). Group submissions are allowed, with a maximum of five members per team. However, each student is responsible for fully understanding how to solve all the problems in the set. Only one submission per team is required, but be sure to list all team members on Gradescope when submitting. Late submissions will incur a penalty of 10 points out of 100. Solutions will be posted immediately after the submission deadline and will be reviewed during the discussion section.

Graded problem sets will be returned one week after submission. You should examine the solutions to review any areas of confusion or questions marked as incorrect. Regrade requests will be available only within two weeks after submission. Note, I cannot give deadline extensions for the problem sets; however, I do drop the lowest problem set grade, which provides you with some flexibility in handling unexpected events. Assignments that require coding should include a printout of the code used to generate the necessary output to problem-set questions as part of the submission. Students must develop basic familiarity with Stata, which will be covered in class and discussion sections. Students may use vLAB to access university software. Off-Campus use requires cVPN.

Exams: Exams will cover material from lectures, problem sets, and the textbook. You will have 40 minutes to complete both the midterm and the final exam. Each exam will consist entirely of multiple-choice questions and will be administered in person. You must bring a computer or tablet to take the exam, as it will be delivered through Canvas. No books, notes, phones, or internet access of any kind are permitted during the exam. Exams must be completed individually, and no communication with others about any aspect of the course is allowed during the testing period. Additionally, no part of the exam may be copied, shared, posted online, or distributed in any form at any time. Any student who violates these policies will fail the course and be referred to the Dean of Students.

If you experience health, mental, or personal issues that may prevent you from preparing for the midterm and are considering missing it, you must obtain prior approval from me through **official communication from your academic advisor** at least two business days before the scheduled exam. Personal requests made directly by students will not be accepted.

In the event of a medical emergency within 24 hours of the exam, you must notify your academic advisor as soon as possible and have them contact me in the following days to verify the situation.

If an official excuse is granted, your final exam score will replace your midterm score. Please note, however, that the final exam is designed to be more challenging than the midterm. It is **impossible** to take the final exam on a different day or time than the one established by the University Registrar.

If you miss the final with an excuse that meets University standards you will receive an incomplete for the course and will be required to resolve it in the upcoming quarters in order to receive a letter grade. Please note that travel plans are not an approved excuse for missing an exam. If you make travel plans that conflict with the final for any reason other than a university approved excuse, you will receive a zero for the final.

Class Paper: Students will collaborate in groups of up to four to work on a project using data and a prompt I will provide later on in the course. Students will tackle a relevant economic question and should use methods developed during the course to answer this question and give a detailed explanation of their findings. Each group will give a 6-minute presentation of their results. This class paper is worth 10% of your grade.

Attendance: Students are expected to attend every lecture and actively participate in class activities. Lectures are the primary source of the material you are required to learn for this course. While the textbook can serve as a helpful supplement, it is not a substitute for attending lectures.

- Lecture slides will be provided, but they are designed to support—not replace—what is discussed in class. They do not contain all the explanations, examples, or insights necessary to succeed in the course.
- Lecture notes will not be recorded or distributed. You are responsible for attending class and taking your own notes based on the material presented and discussed.
- Missing class means missing critical information that will not be available elsewhere.

General Policies

Our Class Meetings

We will meet every Tuesday and Thursday between September 30th and December 4th. Lectures will begin at 9:30 am and end at 10:50 am.

Academic Honesty

To cultivate an environment of academic integrity, the University of Chicago expects students to abide by the University's Academic Honesty and Plagiarism Policy, found in the University of Chicago Student Manual.

Student Code of Conduct

Students are expected to abide by the University of Chicago's Student Code of Conduct.

Sexual Misconduct Policy

In accordance with the University of Chicago's Policy on Harassment, Discrimination, and Sexual Misconduct, your instructor is a "responsible employee" for reporting purposes under Title IX regulations and state law and must report incidents of sexual misconduct (sexual harassment, non-consensual sexual contact, sexual assault, sexual exploitation, sexual intimidation, intimate partner violence, or stalking) about which they become aware to the Title IX office. Please know there are places on campus where you can make a report in confidence. More information can be found on the Title IX website.

Special Accommodations and 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 accommodations) 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`

For exam accommodations, it is recommended that students send their Instructor Notification Letters at the beginning of the quarter, or as soon as possible. Instructor Notification Letters must be sent no later than 7 days prior to the first quiz/exam date for the class for each class for which a student is seeking to use accommodations.

To submit a Notification Letter, students should complete the following steps after they have sent their Instructor Notification Letter:

1. Log in to the AIM Student Portal (https://rainier.accessiblelearning.com/UChicago)
2. Select "Alternative Testing" on the left-hand side of the page.
3. Select the course for which you are scheduling with SDS from the drop-down menu at the top of the page.

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 nondiscrimination. 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.

Use of AI Tools

In this course, we will be developing skills and knowledge that are important to discover and practice on your own. Because use of AI tools inhibits development of these skills and knowledge, students are not allowed to use any AI tools, such as ChatGPT, DeepSeek or Dall E 2, in this course. Students are expected to present work that is their own without assistance from others, including automated tools. If you are unclear if something is an AI tool, please check with your instructor. Using AI tools for any purposes in this course will violate the University's academic integrity policy.

Syllabus Changes

Notice that I may need to adjust the syllabus, depending on our progress in the course. In such case, I will notify you about these changes during the lectures and through our Canvas website.

Course Outline and Schedule

The following schedule is tentative and subject to minor changes.

Week	Date	Lecture	Topics	Textbook pages	PS/Paper due
1	9/30	1	Introduction; Statistics Review	1-4	
	10/2	2	Simple Linear Regression	5-6	
2	10/7	3	OLS and Multivariate Regression	7-9	
	10/9	4	Assumptions, Properties and Inference	10-11	
3	10/14	5	Normality and Statistical Inference	11-12, 24-37	PS1 (10/15)
	10/16	6	Inference, Interpretation and Specification	37-41	
4	10/21	7	Specification and Hypothesis Testing	13-23	PS2 (10/22)
	10/23	8	Specification Issues	42-53	
5	10/28	9	RCTs	54-59, 66-70	PS3 (10/29)
	10/30	10	Panel Data; Fixed Effects		
6	11/4		**Midterm**		
	11/6	11	Difference in Differences (DiD)	74-79	
7	11/11	12	Parallel Trends Assumption (PTA)		
	11/13	13	Instrumental Variables (IV)		
8	11/18	14	Regression Discontinuity Design (RDD)	70-73	PS4 (11/19)
	11/20	15	Research Workshop		
9	11/25		**Thanksgiving**		
	11/27		**Break**		
10	12/2	16	Presentations		
	12/4	17	Presentations		Paper (12/12)
11	12/?	Final	**Final Exam - Tuesday, December 9th at 10:00 am**		