

UNIVERSITY OF NOTRE DAME
Department of Economics
Fall 2019

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Office Hours: Monday 1:30-3:00 p.m., Wednesday 9:30-11:00 a.m., or by appointment

ECON 30331: Econometrics (TR 11:00-12:15, DeBartolo 129)

Econometrics is a set of statistical and analytical tools that social scientists use to learn from real-world data. Economists use econometrics to test the predictions of economic models, to identify relationships and patterns in data, and to estimate the causal effects of actions, events, and policies.

The core of the course will be a discussion of regression analysis (specification, estimation, and hypothesis testing), and the problems and pitfalls in its application in economics and other social science fields. I will provide an overview of how to carry out and interpret empirical research, using both theory and practice. While I will use the language of math and statistics to present much of the material, I will also help you to gain an intuitive understanding of the principles at work.

On successful completion of this course you should be a thoughtful consumer and a careful practitioner of social science research, and will be equipped with analytical tools that are valued by employers and quantitative graduate programs. You will also learn to use the statistical software package Stata. Doing well in this course will therefore serve you very well, but doing so will not be easy. Most students find the course to be rigorous and demanding. We will move quickly and cover a large amount of material. I advise you to prepare for class and keep up with the material, as the course does not lend itself to memorization or all-night cram sessions.

Statistics for Economics is a prerequisite for this course, although comparable courses or a sufficient math background may substitute. You will need to be able to do basic derivatives, and be familiar with the concepts of hypothesis testing, and the properties of the expectation, variance, and covariance operators. To gauge your understanding of the prerequisites, you should consult Appendices A, B, and C of the Wooldridge text to see whether you are familiar with the material contained therein. I urge you to talk to me during the first week of class if you are concerned about your level of preparation.

Texts: 1) Wooldridge, Introductory Econometrics: A Modern Approach. 6th ed, 2016.

Prior editions should work with only very minor adjustments. You can also access the text using the subscription service “Cengage Unlimited.” A link to information is available on the class website. You may also have a version of the book that includes access to MindTap content for the course, including practice problems and some instructional videos. This content is strictly optional but you are welcome to use it if it you find it helpful.

2) Angrist and Pischke, Mastering Metrics. 2015. (Optional)

Website: <http://www3.nd.edu/~kbuckles/ec30331.html>. The website has handouts, data sets, class notes, assignment information, and more. It should be very useful to you.

Stata: You will be required to use the statistical software package *Stata* for this course. It is available in all classrooms and clusters on campus, but you can also purchase a license at a discounted rate through GradPlan. See the course website for information and a link.

Panopto recordings: This course will be recorded using Panopto. This system allows Notre Dame to automatically record and distribute my lectures in a secure environment. You can access these recordings through Sakai, beginning about an hour after each class. They are searchable and I hope they will be a useful resource for you. *However*, I strongly believe that attending class in person is the best way to learn in this course, so that you can ask questions during the lectures and participate in in-class activities. If I begin to suspect that the availability of the Panopto recordings is leading to low attendance and a poor in-class environment, I reserve the right to restrict access or stop them altogether.

Because we will be recording in the classroom, your questions and comments may be recorded. Recordings typically only capture the front of the classroom, but if you have any concerns about your voice or image being recorded please speak to me. These recordings are jointly copyrighted by the University of Notre Dame and me. Posting them to other websites (including YouTube, Facebook, SnapChat, etc.) or elsewhere without express, written permission may result in disciplinary action and possible civil prosecution.

Laptop policy: Please do not use laptops in class. I will usually write on the board for lectures, with lots of symbols and equations, so a laptop is not useful for note-taking. If you would like to request an exemption from this policy, please contact me during the first week of class.

Peer tutoring: The Econ Club and the Department of Economics co-coordinate a peer tutoring lab for core courses, including Econometrics. I will announce their hours/location in class once they have been posted.

Grading: Your final grade will be based on the following:

Problem Sets	30% (5% each)
Project	10%
Midterm 1	20%
Midterm 2	20%
<u>Final Exam</u>	<u>20%</u>
Total	100%

Final grades will be curved at the end of the semester, to achieve a distribution that is roughly 40% A/A-; 40% B+/B/B-; 20% C or below.

Problem sets: You will be assigned six problem sets. The problem sets will require the use *Stata*, which is available on computers in the classrooms and clusters. The problem sets are designed to serve two main purposes. First, they will prepare you for exams by allowing you to test your understanding of the material. Second, they will prepare you for the course project by allowing you to practice using *Stata*. Many people find that small group discussions help with their understanding. *Thus, you are allowed to form a group of up to four people to work on the problem sets.* Each group will turn in one copy and everyone will receive the same grade. By putting your name on the group work, you are acknowledging not only that you and everyone else in the group did their fair share, but also that you understand how the group arrived at all of

the answers. Thus, it is *not acceptable* to simply split the problem set questions up among the group and then staple the answers together at the end. Note that you are not required to stick with the same group for every assignment.

Course project: There will be a written project due **in class on Tuesday, November 19**. The project will consist of carrying out an empirical project and writing up the results in the form of a research paper. Further details on the nature of the project will be provided before Fall Break. Generally, the course project is designed to give you a feel for working on a real research question, and thus to help better prepare you for carrying out your own inquiries. *You are required to work in groups of three or four*. You should identify your group by 10/15; if you cannot find a group I will assign you one. While it may be reasonable to split up writing duties, the overall approach and interpretation of the results needs to be fully discussed among the group members. Again your name on the paper is an acknowledgement that everyone in the group did their fair share and understands what was done.

Exams: There will be two in-class exams and a comprehensive final exam. Each midterm will cover a third of the course, and the final will be cumulative with an emphasis on material from the last third of the course. Attendance for exams is ABSOLUTELY mandatory—including the final, which will be given on **Thursday, December 19, 1:45-3:45 p.m.** *Do not schedule travel or other conflicts during exam times.* Only university-approved absences will be allowed (death in the immediate family, sickness resulting in hospitalization), and I will require verification. Unexcused absences will earn you a zero on the exam.

I will have extended office hours before each of the two midterms, possibly via Panopto.

Attendance and participation: While no grade is explicitly given for attendance, it will be difficult to do well in this course without regular attendance. Also, good participation helps “on the margin” when it comes to final grades.

Honor Code information: In signing the university’s honor code, you agreed not to participate in or tolerate academic dishonesty. I expect you to adhere to this strictly, and any violations will be reported to the Associate Provost. You may work in groups on problem sets and the project as outlined above.

Lauren’s Promise: I will listen and believe you if someone is threatening or harassing you.

Lauren McCluskey, a 21-year old student at the University of Utah and the daughter of economist Jill McCluskey, was murdered on Oct. 22, 2018 by a man she briefly dated. I am committed to doing what I can to make sure this does not happen again.

If you are in immediate danger, call 911. If you are experiencing sexual assault, domestic violence, stalking, or harassment you can report it to me. You should be aware that I am a mandatory reporter, which means that I am required to report these instances to the university’s Title IX Coordinator or Deputy Title IX Coordinator to investigate. **You can also learn about your options (on-campus and off-campus, confidential and not) at <http://titleix.nd.edu>.**

If you are in need of support for your mental or emotional health for any reason, you can find helpful resources at <http://ucc.nd.edu>.

Schedule

(subject to change)

Date	Topic	Wooldridge Chapter	Assignment Due
Aug.	27	Introduction & Data	1
	29	Simple Regression	2
Sept.	3	Simple Regression	2
	5	NO CLASS	
	10	Multiple Regression	3 (+ A&P Ch. 1&2)
	12	Multiple Regression	3 (+ A&P Ch. 1&2)
	17	Multiple Regression	3 (+ A&P Ch. 1&2) Problem Set 1
	19	Inference	4
	24	Inference	4
	26	Dummy Variables	7 Problem Set 2
Oct.	1	MIDTERM 1, in class	
	3	Asymptotics and Further Issues	5, 6
	8	Further Issues	6
	10	Heteroskedasticity	8
	14	Heteroskedasticity	8
	17	Econometrics in Pop Culture	Problem Set 3
	29	Specification and Data Problems	9
	31	Specification and Data Problems	9 Problem Set 4
Nov.	5	Applications	
	7	MIDTERM 2, in class	
	12	Instrumental Variables	15 (+ A&P Ch. 3)
	14	Instrumental Variables	15 (+ A&P Ch. 3)
	19	Regression Discontinuity	A&P Ch. 4 Project
	21	Regression Discontinuity	A&P Ch. 4
	26	Panel Data	13, 14 (+ A&P Ch. 5)
	28	NO CLASS (Thanksgiving)	
Dec.	3	Panel Data	13, 14 (+ A&P Ch. 5) Problem Set 5
	5	Panel Data	13, 14 (+ A&P Ch. 5)
	10	Time Series	10, 11, 12
	12	Applications/Review	Problem Set 6
	19	FINAL EXAM, 1:45-3:45	