UNIVERSITY of HOUSTON

Applied Econometrics – Econ 4315

Fall Semester – 2025

Monday-Wednesday: 10:00 AM - 11:30 AM

Bates Law, Room 3

Contact information

Instructor:

Prof. Andrea Szabo

E-mail: aszabo2@uh.edu

Office hours: By appointment only.

You can schedule an appointment at

http://www.uh.edu/~aszabo2/appointments.htm

There is a 24-hour minimum notice to book office hours. Please indicate during scheduling whether you prefer Zoom or in-person office hours. I offer in-person office hours only on Tuesdays. I continuously update the scheduling site to add new office hours during the semester.

Teaching Assistant:

TBA

E-mail: TBA

Office hours: TBA

Course Description

Econ 4395 is a continuation of Econ 3370 and introduces students to several extensions of multiple regression methods for analyzing data in economics and related disciplines. Topics include regression with panel data, instrumental variables regression, and the analysis of randomized experiments. The objective of the course is for the student to learn how to conduct – and how to critique – empirical studies in economics and related fields. Accordingly, the emphasis of the course is on empirical applications. The mathematics of econometrics will be introduced only as needed and will not be a central focus.

The class includes three replication projects where students will study three research papers in depth and replicate their empirical results with the provided data. These projects include papers from the field of economic history / economic growth, industrial organization, and development economics.

Prerequisites

Students are expected to have taken an introductory course in probability and statistics (Econ 2370) and Introduction to Econometrics (Econ 3370). Students are also expected to

know how to run OLS regressions in STATA. Homework 0 provides a review of these skills.

Textbook

James H. Stock and Mark W. Watson (SW): Introduction to Econometrics, 4th edition, Pearson, 2023, ISBN-13: 9780137619733.

The 3rd edition is also acceptable, the core content is very similar, though chapter numbers and some examples may differ slightly.

In addition to the textbook, we will also discuss selected journal articles, which will be posted on Canvas or available through the UH Library website.

Course Requirements

There will be 10 homework assignments, and 3 midterm exams.

All homework assignments will be done online through the University of Houston Canvas site. All Problem Sets are due on the day listed below by 9.00 am.

Midterms will be given in class on the dates listed in the calendar.

All exams are open book and open notes (hard copies only). No cooperation is allowed during the tests. Academic misconduct will not be tolerated and any instances of it will be dealt with according to the appropriate University channels.

If you disagree with the grading of a midterm, submit it for further review. You must submit a written argument for why you deserve more points for the specific question(s) you would like re-graded. If you do not specify this, the entire test will be re-graded and it is possible that you may lose points. You must submit these arguments within one week after the midterm has been returned.

Class Website

All assignments and handouts will be posted on the class website in Canvas.

All technical and login help for Canvas is provided by UH IT.
Email: support@uh.edu
Phone: 713-743-1411, every day 8 am to 8 pm (except University holidays)
Live chat: http://www.uh.edu/infotech/livechat Monday-Friday 8 am to 8 pm (not available Saturday-Sunday and on university holidays)

Statistical software package

You will be required to use *Stata*, a statistical software package. Students can purchase various products at much reduced rates directly from *Stata*. The current version is *Stata 19*. I suggest that you buy *Stata/BE* which will be able to handle all of the problems that I will assign in the course. The current pricing for a 6 month license is $48 for *Stata/BE*. For more detail and to order *Stata* online see the website below.
https://www.stata.com/order/new/edu/profplus/student-pricing/

Grading

Course Component	*Percentage from the final grade*
Problem Sets	40
Midterm 1	20
Midterm 2	20
Midterm 3	20
Total	100

I will drop your two lowest homework score to allow for some flexibility. Thus you will have 8 problem sets that count towards your final grade.
The numerical course grade will be converted to a letter grade according to the following scale:

92%-100%	A
90%-91%	A-
88%-89%	B+
82%-87%	B
80%-81%	B-
70%-79%	C+
50%-69%	C
40%-49%	C-
38%-39%	D+
33%-37%	D
30%-32%	D-
-29%	F

There is no curve for the class. This means that you are not competing with other students, and you will always know exactly where you stand in the class based on your performance.

Tentative Course Schedule:
Textbook page numbers are based on the fourth edition

Week	Class #	Date/Day			Topic	SW Ch. #	Problem Sets
Week 1	1	Aug	25	M	Welcome to Applied Econometrics! Syllabus, introduction		
	2		27	W	Review of the Linear Regression Model I *The linear regression model, The Least Squares Assumptions, Hypothesis Tests, Confidence Intervals, Regression when X is Binary, Heteroskedasticity, Homoskedacity,*	Ch. 4-5	
Week 2	3	Sept	1	M	**NO CLASS Labor Day Holiday, UH closed**		
	4		3	W	Review of the Linear Regression Model II *Omitted Variable Bias, Measure of Fit Multicollinearity*	Ch. 6	PS 0 Due
Week 3	5		8	M	Linear Regression with Multiple Regressors *Hypothesis Tests Confidence Sets, Model Specification*	Ch 7 p. 205-227	
	6		10	W	STATA review class		PS 1 Due
Week 4	7		15	M	Nonlinear Regression Functions *General Strategy, Nonlinear Functions of Single Independent Variables. Interactions Between Independent Variables*	Ch 8. p.235-274	
	8		17	W	Assessing Studies Based on Multiple Regression I. *Internal and External Validity*	Ch. 9. p. 288-303	PS 2 Due
Week 5	9		22	M	Assessing Studies Based on Multiple Regression II. *Example: Test Scores and Class Size*	Ch. 9. p. 303-313	
	10		24	W	Regression with Panel Data I. *Entity Fixed Effects, Time Fixed Effects*	Ch 10 p.319-332	PS 3 Due
Week 6	11		29	M	Regression with Panel Data II. *Standard Errors Example: Drunk Driving Laws and Traffic Deaths*	Ch 10 p.332-340	
	12	Oct	1	W	Replication study 1: Lewis, G. (2011): "Asymmetric Information, Adverse Selection and		PS 4 Due

					Online Disclosure: The Case of eBay Motors", *American Economic Review*, 101(4), 1535–1546.		
Week 7	13		6	M	Replication study 1: *Limited Information, Subsamples, More on clustered standard errors.*		
	14		8	W	Replication study 1: Additional related research papers		PS 5 Due
Week 8	15		13	M	**Midterm I**		
	16		15	W	Instrumental Variables Regression I. *IV Estimator with a Single Regressor and a Single Instrument, General IV Regression Model*	Ch 12 p. 385-402	
Week 9	17		20	M	Instrumental Variables Regression II. *Instrument Validity* *Example: Demand for Cigarettes*	Ch 12 p. 402-418	
	18		22	W	Instrumental Variables Regression III. Cohen, A. and L. Einav (2003): "The Effect of Mandatory Seat Belt Laws on Driving Behavior and Traffic Fatalities, *The Review of Economics and Statistics*, 85(4), 828-843.		
Week 10	19		27	M	Replication study 2: Nunn, N. (2008): "The Long-Term Effects of Africa's Slave Traders", *The Quarterly Journal of Economics,* 123(1), 139-176.		PS 6 Due
	20		29	W	Replication study 2: *Choosing a valid instrument, Data collection techniques, Hausman test, Sargent test*		
Week 11	21	Nov	3	M	Replication study 2: Additional related research papers		PS 7 Due
	22		5	W	**Midterm II**		
Week 12	23		10	M	Experiments I. *Potential Problems with Experiments in Practice*	Ch 13 p.432-440, 450-453	
	24		12	W	Experiments II. *The Differences-in-Differences Estimator Example: The Tennessee Class Size Reduction Experiment*	Ch 13 p.440-448	
Week	25		17	M	Replication study 3:		PS 8 Due

13					A. Szabo and G. Ujhelyi (2015): "Reducing Nonpayment for Public Utilities: Experimental Evidence from South Africa", *Journal of Development Economics*, 117, 20–31.		
	26		19	W	Replication study 3: *Effect of information / asymmetric information in economics, How to organize randomized experiments: Practical advice*		
Week 14	27		24	M	Replication study 3: Additional related research papers		PS 9 Due
	28		26	W	**NO CLASS, Thanksgiving Holiday UH closed**		
Week 15	29	Dec	1	M	Closing, review, advice on how to start and conduct an empirical project		
	30		3	W	**Midterm III**		