

ECON 470 — Econometrics

University of North Carolina at Chapel Hill, Spring 2023

Course information

Instructor: Christopher Handy, chandy@unc.edu

Class meetings

ECON 470-002: Tuesday and Thursday, 9:30am–10:45am, Genome Science G010

ECON 470-003: Tuesday and Thursday, 11:00am–12:15pm, Genome Science G010

Office hours: see information on Sakai

Course description

Econometrics is the application of statistical methods and economic theory to the problem of identifying, estimating, and testing economic models. This course covers concepts and methods used in empirical economic research. You will learn how to conduct and how to critique empirical studies in economics.

Prerequisites: ECON 400 and 410 with a grade of C or better in both courses

Course objectives

In this course you will ...

- study correlations and make comparisons using linear regression, and understand the conditions under which an estimated regression coefficient would have a causal interpretation;
- interpret and communicate the magnitude, economic significance, and statistical significance of econometric results;
- understand the usefulness and limitations of research designs aimed at isolating causal effects, and be able to implement the associated econometric analyses; and
- further develop skill in data management and programming by using statistical software to clean data, generate estimates, and write script files.

IDEAs in Action curriculum learning outcomes

This course fulfills the Quantitative Reasoning focus capacity of the IDEAs in Action general education curriculum, which has the following learning outcomes.

1. Summarize, interpret, and present quantitative data in mathematical forms, such as graphs, diagrams, tables, or mathematical text.
2. Develop or compute representations of data using mathematical forms or equations as models, and use statistical methods to assess their validity.

3. Make and evaluate important assumptions in the estimation, modeling, and analysis of data, and recognize the limitations of the results.
4. Apply mathematical concepts, data, procedures, and solutions to make judgments and draw conclusions.
5. Synthesize and present quantitative data to others to explain findings or to provide quantitative evidence in support of a position.

Materials

Recommended text: Wooldridge, *Introductory Econometrics: A Modern Approach*, any edition

Software: Stata/BE, available at www.stata.com/order/new/edu/profplus/student-pricing/, on Virtual Lab, and in campus computer labs

Website: Sakai, sakai.unc.edu/portal/site/econ470spring2023

Course components and grading

Your grade will be determined from the following components.

Participation	5%
Assignments	15%
Exam 1	20%
Exam 2	20%
Final exam	30%
Highest exam	10%

I will use the following grading scale, although I may curve numerical grades to higher letter grades at the end of the semester if needed.

A	[93, 100]	C+	[77, 80)
A-	[90, 93)	C	[73, 77)
B+	[87, 90)	C-	[70, 73)
B	[83, 87)	D+	[67, 70)
B-	[80, 83)	D	[60, 67)
		F	[0, 60)

Participation: You will answer questions in class using Poll Everywhere. Your participation score is based on whether you answer these questions; there is no penalty for incorrect answers. I expect you to be in the classroom in order to answer these questions. You can fail to respond to 15 percent of the poll questions before losing points on your participation score.

Assignments: The assignments will typically include a mix of analytical questions and empirical work for which you will use Stata. There will be approximately six assignments, and tentative due dates are included on the schedule below. I will drop the lowest assignment score before

computing your assignment average. You must first attempt each assignment on your own. After that, you may work with classmates, but you may not simply share answers.

Midterm exams: There will be two in-class exams. The dates of these are on the schedule below.

Final exam: The final exam details for each section are listed below. In general, you must take the exam with the section for which you are registered. If you obtain an official exam excuse, you will take the exam with the other section if possible, or during the departmental make-up exam period, which has not yet been announced.

ECON 470–002 (meeting TR 9:30am): Tuesday, May 9, 8:00–11:00am, Genome Science G010

ECON 470–003 (meeting TR 11:00am): Friday, May 5, 12:00–3:00pm, Genome Science G010

Highest exam: I will use the highest of your three exam scores (exam 1, exam 2, and final exam) for this component of your grade.

Academic policies

Attendance: I expect you to attend class if you are able, and to prepare for class by doing any assigned reading and watching any assigned videos. I will post a recording of each day's class, and you should watch it if you have to miss class for any reason.

Conduct: Please respect your fellow students by behaving professionally. This includes arriving on time, not leaving class unnecessarily, and not distracting others.

Honor code: I expect you to follow the guidelines of the UNC honor code; each of you has pledged "not to lie, cheat, or steal." Collaboration is encouraged on assignments but prohibited on exams. You may not consult materials from any previous offering of this course for any reason, and I expect you not to share materials with any future students of this course. If you have questions about the honor code, please ask me or consult the [Honor System webpage](#).

Late assignments: Assignments are accepted up to 24 hours after the deadline with no penalty, and are not accepted after that. I know that things like personal emergencies or computer problems may prevent you from submitting an assignment, which is why I drop the lowest two assignment scores before computing your assignment average. Exceptions to this policy will generally only be made if you accumulate University Approved Absences covering a significant amount of time.

Missed exams: If you miss a midterm exam and you have a University Approved Absence, I will replace the grade on that exam with the average of your future exam grades. For the final exam, the university policy is that you may only take the exam outside the scheduled time if you have an [official final exam excuse](#), and requests involving religious observance or a scheduling conflict must be made no later than the final day of classes. Exams missed without an official approval or excuse will generally receive a grade of zero.

Syllabus changes: I reserve the right to make changes to the syllabus, including assignment due dates and exam dates. These changes will be announced as early as possible.

Academic resources and student support

Accessibility Resources and Services: The University of North Carolina at Chapel Hill facilitates the implementation of reasonable accommodations, including resources and services, for students with a disability and/or a chronic health diagnosis resulting in barriers to fully accessing University courses, programs and activities. Accommodations are determined by the Office of Accessibility Resources and Service (ARS) through their [Student and Applicant Accommodations Policy](#), which documents qualifying disabilities in accordance with applicable state and federal laws. See the [ARS Website](#) for contact information or email ars@unc.edu.

Counseling and Psychological Services: UNC–Chapel Hill is strongly committed to addressing the mental health needs of a diverse student body. The [Heels Care Network website](#) is a place to access the many mental health resources at Carolina. CAPS is the primary mental health provider for students, offering timely access to consultation and connection to clinically appropriate services. Go to [their website](#) or visit their facilities on the third floor of the Campus Health building for an initial evaluation to learn more. Students can also call CAPS 24/7 at 919-966-3658 for immediate assistance.

Title IX resources: Any student who is impacted by discrimination, harassment, interpersonal (relationship) violence, sexual violence, sexual exploitation, or stalking is encouraged to seek resources on campus or in the community. Reports can be made [online to the EOC](#). Please contact the University's Title IX Coordinator (Elizabeth Hall, titleixcoordinator@unc.edu), Report and Response Coordinators in the Equal Opportunity and Compliance Office (reportandresponse@unc.edu), Counseling and Psychological Services (confidential), or the Gender Violence Services Coordinators (gvsc@unc.edu; confidential) to discuss your specific needs. Additional resources are available at [safe.unc.edu](#).

Schedule of topics and assessments

Week	Dates	Tuesday	Thursday	Assignments
1	Jan. 9–15	Causality	Statistics preliminaries	
2	Jan. 16–22	Statistics preliminaries	Simple regression	A1 due
3	Jan. 23–29	Simple regression	Simple regression	
4	Jan. 30–Feb. 5	Simple regression	Multiple regression	A2 due
5	Feb. 6–12	Multiple regression	Exam 1	
6	Feb. 13–19	No class: Well-being day	Multiple regression	
7	Feb. 20–26	Multiple regression	Regression inference	A3 due
8	Feb. 27–Mar. 5	Regression inference	Regression inference	
9	Mar. 6–12	OLS asymptotics	OLS asymptotics	A4 due
	Mar. 13–19	No class: Spring Break	No class: Spring Break	
10	Mar. 20–26	Binary dependent variables	Exam 2	
11	Mar. 27–Apr. 2	Measurement error	Panel data and diff-in-diff	
12	Apr. 3–9	Panel data and diff-in-diff	No class: Well-being day	A5 due
13	Apr. 10–16	Panel data and diff-in-diff	First differences and fixed effects	
14	Apr. 17–23	First differences and fixed effects	Instrumental variables	
15	Apr. 24–30	Instrumental variables	Other methods for causal inference	A6 due

Final exam, section 2 (meeting TR 9:30am): Tuesday, May 9, 8:00–11:00am, Genome Science G010

Final exam, section 3 (meeting TR 11:00am): Friday, May 5, 12:00–3:00pm, Genome Science G010