Brantly Callaway
B422 Amos Hall
Email: brantly.callaway@uga.edu
Zoom: https://zoom.us/my/brantly.callaway

University of Georgia
Department of Economics
ECON 4750
Fall 2025

Introduction to Econometrics

Syllabus

Course Time: MWF 11:30–12:20

Location: Ivester Hall E101

Office Hours: Monday 12:30–1:30pm or by appointment (in person or via Zoom)

Teaching Assistant: Wenyi Wang, email: wenyiwang@uga.edu, office hours: Mondays 9:00–10:00am or by appointment (in person, Amos B450) or Zoom.

Course Description:

Econometrics is the field of economics that combines statistical methods and economic theory to analyze economic data. This course provides an introduction to econometric theory and methods for undergraduate students. The topics include regression analysis, working with cross sectional and panel data, and dealing with common challenges in economics and business by those analyzing data. Fair warning: the course is relatively math intensive (though only knowledge of algebra and basic probability and statistics is required) and requires quite a bit of computer programming (very little prior experience is required here either). We will work with real data and develop the skills needed for carrying out empirical work.

Course Outline:

1. Introduction to Statistical Programming
2. Crash Course on Probability
3. Properties of Estimators
4. Linear Regression
5. Introduction to Prediction
6. Causal Inference

Course Materials:

- Course Website (https://bcallaway11.github.io/Courses/ECON_4750_Fall_2025/)

- eLC (https://elc.uga.edu)

Textbook:

(1) Course Notes (https://bcallaway11.github.io/econ_4750_notes/)

(2) **Suggested:** Introduction to Econometrics, 4th Edition, by James Stock and Mark Watson.

[The course will mainly rely on the Course Notes. That said, there are cross references in the Course Notes to the Stock and Watson textbook. In principle, the textbook is not strictly required, but I recommend acquiring the book (or a previous version) if possible.]

Additional References: (these are all free to download; they are not main textbooks but I sometimes consult them for the class and could potentially be useful for you to consult in the future)

(1) For R programming: Introduction to Econometrics with R, by Cristoph Hanck, Martin Arnold, Alexander Gerber, and Martin Schmelzer (https://www.econometrics-with-r.org/)

(2) For prediction/machine learning: An Introduction to Statistical Learning, by Gareth James, Daniela Witten, Trevor Hastie, and Robert Tibshirani (https://www.statlearning.com/)

(3) For causal inference: Causal Inference: The Mixtape, by Scott Cunningham (https://mixtape.scunning.com/)

Software:

We will use R (https://www.r-project.org/) to analyze data. R is freely available and available across platforms. You should go ahead and download R for your personal computer as soon as possible. It is also available at most computer labs on campus.

I also recommend using RStudio as a tool for writing code in R. You can download it here: https://posit.co/download/rstudio-desktop/; choose the free version based on your operating system (Windows, Mac, etc.).

If you have a laptop, I recommend bringing it to class. We will often spend 15-30 minutes of class working on problems using actual data, and I think that it is most helpful for you to be able to work on the problem as I go through it with the class.

Additional R References:

There are tons of free R resources available online. Here are some that seem particularly useful to me.

(1) Full length book: Introduction to Data Science: Data Wrangling and Visualization with R, by Rafael Irizarry (this is way more than you will need for this course, but I suggest checking out Chapters 1, 2, 3, and 5, and there's plenty more that you might find interesting).

(2) Shorter Video Tutorials on LinkedIn Learning: R for Data Science: Analysis and Visualization, by Barton Poulson. You should have access to LinkedIn Learning by logging in with your UGA credentials.

Homeworks:

There will be roughly 5 or 6 homeworks throughout the semester. They will be a mix of problems and data work. Homeworks will be due at the start of class, and I do not accept late homeworks. You should turn in a hard copy of your homework. For coding homeworks, I expect both the code written and the output of the code should be turned in, and I expect the results to be very concise (in general, less than 1 page per answer). This semester I am going to try out having an in-class quiz the day that the homework is due. The quiz will be related to the homework and cound 50% of your homework grade. The other 50% will come from the homework itself.

Projects:

The course will involve two projects. Roughly: one will be scheduled for 2/3 of the way through the semester, and the other will be scheduled for the end of the semester.

Using Additional Resources and Collaboration:

You are welcome to discuss course materials with AI tools such as ChatGPT as well as with other students in the course. In my view, both of these are very useful resources. However, all assignments should be the product of individual work and not copied or heavily drawn from ChatGPT or another student.

Tests:

There will be two midterms and a final exam. The exams will be taken in class.

- Midterm 1: Wednesday, Sept. 24, in class
- Midterm 2: Wednesday, Oct. 29, in class
- Final Exam: Friday, Dec. 5, 12:00–3:00pm

Attendance:

In-person attendance for the class is required. My general expectation is that students will show up for all classes during the semester. I will periodically take attendance.

You are authorized to miss class due to health reasons. You do not need to provide me any documentation like a doctor's note unless the number of absences starts to add up. For other absences, please contact me. The main other types of excused absences are for major health issues of a close relative, a sibling's wedding, and religious holidays. The main types of unexcused absences are for job interviews, other work, taking the GRE, other travel, and participation in clubs or other extracurricular activities.

Grades: Grades will be 50% exams (15% for each midterm, 20% for the final exam), 20% homeworks, 10%

for each project, 10% for attendance/participation. Half of the attendance/participation grade will come from your attendance record and half from my evaluation of your participation during class class.

A	A-	B+	B	B-	C+	C	C-	D	F
93-100	90-93	87-90	83-87	80-83	77-80	73-77	70-73	60-70	<60

I may curve some exams and/or final grades.

ECON 6750 and Honors Option

For students enrolled in ECON 6750 or in the Honors option for the course, there are two additional requirements: (i) more extensive versions of the two course projects, and (ii) one additional question on each exam.

Course Statements and Policies

- *UGA Student Honor Code:*
  "I will be academically honest in all of my academic work and will not tolerate academic dishonesty of others." A Culture of Honesty, the University's policy and procedures for handling cases of suspected dishonesty, can be found at honesty.uga.edu.
- *Syllabus Changes:*
  The course syllabus is a general plan for the course; deviations announced to the class by the instructor may be necessary.
- *UGA Well-being Resources:*
  "UGA Well-being Resources promote student success by cultivating a culture that supports a more active, healthy, and engaged student community."
  Anyone needing assistance is encouraged to contact Student Care & Outreach (SCO) in the Division of Student Affairs at `706-542-8479` or visit sco.uga.edu. Student Care & Outreach helps students navigate difficult circumstances by connecting them with the most appropriate resources or services. They also administer the Embark@UGA program which supports students experiencing, or who have experienced, homelessness, foster care, or housing insecurity.
  UGA provides both clinical and non-clinical options to support student well-being and mental health, any time, any place. Whether on campus, or studying from home or abroad, UGA Well-being Resources are here to help.
  - Well-being Resources: well-being.uga.edu
  - Student Care and Outreach: sco.uga.edu
  - University Health Center: healthcenter.uga.edu
  - Counseling and Psychiatric Services: caps.uga.edu or CAPS 24/7 crisis support at `706-542-2273`
  - Health Promotion / Fontaine Center: healthpromotion.uga.edu

- Accessibility & Testing: accessibility.uga.edu

Additional information, including free digital well-being resources, can be accessed through the UGA app or by visiting well-being.uga.edu.