

Econometrics (01:220:322:03)

Department of Economics, Rutgers University

Spring 2025

Class hours: M Th 10:20–11:40am

Location: Frelinghuysen Hall A6

Course site: <https://canvas.rutgers.edu>

Instructor: Ruonan Xu

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Office hours: M Th 3:00-4:00pm (in person)

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Office hours: Tu 3:00-4:00pm (Zoom link on Canvas)

TA: Bo-ting Chao

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Office hours: W 11:00am-12:00pm (Zoom link on Canvas)

Final exam: 9:00-11:00am, Monday, May 12

Course Description

Econometrics is a set of research tools used to estimate and test economic relationships. The methods taught in this introductory course can also be employed in the business disciplines of accounting, finance, marketing, management, and in many social science disciplines. The aim of this course is to provide you with the skills helpful in filling the gap between being “a student of economics” and being “a practicing economist.” By taking this introduction to econometrics course you will gain an overview of what econometrics is about, and develop some “intuition” about how things work. The emphasis of this course will be on understanding the tools of econometrics and applying them in practice.

Students who successfully complete Econ 322 should be comfortable with basic statistics and probability. They should be able to use a statistical/econometric computer package to estimate an econometric model and be able to report the results of their work in a non-technical and literate manner. In particular, a student who successfully completes Econ 322 will be able to estimate and interpret linear regression models and be able to distinguish between economic and statistical importance. They should be able to critique reported regression results in applied academic papers and interpret the results for someone who is not trained as an economist.

Prerequisites

It is expected that all students will have taken principles of economics courses covering both microeconomics and macroeconomics (e.g. 220:102 and 220:103 or 220:200), Calculus I (640:135 or 640:151), and an introductory statistics class (e.g. 960:211 or 960:285). It will be assumed that all students have a good command of the material taught in these courses. It is strongly suggested that you review this material at the beginning of this course.

Required Materials

- Textbook: Jeffrey M. Wooldridge, *Introductory Econometrics: A Modern Approach (7th Edition)*.

It is okay with me if you use a previous edition, but you need to make sure you are reading the right chapters.

- The software that will be used in this course is Stata. No prior knowledge of this software package is assumed. This package will be introduced in lectures and problem sets as the course proceeds. The software is available in virtual university computer labs. Students have free access off campus via

<https://it.rutgers.edu/virtual-computer-labs/>

Students can also purchase a 6-month license for Stata at \$48 from the following website:

<https://www.stata.com/order/new/edu/profplus/student-pricing/>

Course Assessments

The final grade for this course will be determined by your performance in regular homework assignments and two exams. Problem sets will be graded on completion and correctness. Each question receives equal weight. Upon completion, you receive 90% of the points awarded to that question; if you mostly answer correctly with some mistakes, you receive 95% of the points; if you answer perfectly, you earn 100% of the points. For instance, there are two big questions, each with five parts. Then, each part is worth ten points. If five parts are completed but mostly incorrect and the other five parts are mostly correct with some mistakes, the total score would be $10 * 5 * 0.9 + 10 * 5 * 0.95 = 92.5$. As a result, I encourage you to attempt every question in the homework. In this case you will get at least 90 out of 100 guaranteed.

Late submissions are subject to a soft scheme.

- within 15 minutes past the deadline: 5 points (out of 100 of that assignment) off.
- 15+ minutes to 12 hours past the deadline: 10 points off.
- 12+ hours to 24 hours since the deadline: 20 points off.
- 1 day + to 2 days past the deadline: 40 points off.
- 2 days + past the deadline: 100 points off.

The calculation will be based on your submission on Canvas. If you anticipate an important event delaying your submission, you should ask for permission at least 48 hours before the deadline. You need official proof (e.g., from doctors or the police) if you experience something unexpected within 48 hours.

The breakdown of weight given to each component is as follows. I will post grading scales after the midterm so that you know where you stand during the semester. Note that students majoring in Economics need to pass this course with a C or higher.

Assessment	Weight
Homework	25%
Midterm	35%
Final	40%

Exams are closed-book. To the midterm you may bring two sheets of notes on standard paper, with writing on both sides. A calculator is also permitted. The final exam will focus on the material after the midterm, but the nature of the material is that the final is cumulative. You may bring four sheets of notes and a calculator to the final exam.

If you do not attend an exam, you will receive a zero score for that exam. Make-up exams (for both midterm and final exams) will be given only in the event of legitimate excuses for missing an exam. “Legitimate excuses” here mean university recognized absences, and often only refer to medical emergencies and religious events. You should discuss your legitimate excuses with me (except for medical emergencies) at least one week ahead of time. Other excuses, such as “attending best friends’ weddings,” are not acceptable. If you need accommodations for exams, please let me know by **Feb 17**.

I do not give extra-credit assignments.

Academic Integrity

I regard academic dishonesty as a very serious offense. By enrolling in this course, you assume responsibility for familiarizing yourself with the Academic Integrity Policy and the possible penalties (including suspension and expulsion) for violating the policy. As per the policy, all sus-

pected violations will be reported to the Office of Student Conduct. Please review the Academic Integrity Policy from <http://nbacademicintegrity.rutgers.edu/home/for-students/>

Any student caught cheating will receive an F for this course and will be reported to the appropriate university authority. There will be no warnings.

Important Dates

Date	Event
January 30	Last day to DROP a course without receiving a W grade
January 30	Last day to ADD a course
March 13	Midterm (regular class time at the same classroom)
Spring break	March 15-23
March 24	Last day to DROP a course with a W grade
May 12	Final

Course Outline

The following is a tentative schedule. We will cover most, but possibly not all.

1. Introduction (Chapter 1)
2. Review of Statistical Concepts (Math Refresher A, B, C in the appendix)
3. The Simple Linear Regression Model (Chapter 2)
4. The Multiple Linear Regression Model (Chapter 3, 4, 5, 6, 8.1-8.2)
5. Dummy Variables (Chapter 7, 8.5)
6. Instrumental Variables Estimation (Chapter 15)
7. Regression Discontinuity (Chapter 7.6)
8. Panel Data and Difference-in-Differences (Chapter 13)