Columbia Business School

B9323: Introduction to Econometrics and Statistical Inference
Fall 2023

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Lecture: Fridays, 9:00am - 12:15pm, Geffen 440
TA Session: TBA

Course Description

This course serves as an introduction to econometrics and statistical inference at the graduate level. Topics will include asymptotic inference, linear regression, an introduction to causal inference, general model estimation techniques, and discrete choice models. The intent is to build a rigorous understanding of basic econometric models and tools necessary for empirical research.

Tentative Course Outline

- Week 1: Limit theorems and asymptotic inference
- Weeks 2 - 4: Linear regression
- Weeks 5 - 8: Introduction to causal inference
- Week 9: General Method of Moments
- Week 10: Maximum likelihood and associated models
- Week 11: Discrete choice models
- Week 12: Bayesian inference and double machine learning

Canvas Site

We will use Canvas for announcements and posting problem sets and grades. You must check the course Canvas site regularly.

Textbook

The textbooks for the course are *Econometric Analysis* by William H. Greene or *Econometrics* by Bruce Hansen. That said, it is not necessary to buy these books. Other recommended textbooks

are *Statistical Inference* by George Casella and Roger Lee Berger and *Econometric Analysis of Cross Section and Panel Data* by Jeffrey Wooldridge.

Statistical Software

We will use Python to run regressions. If you are already familiar with R or Stata, then you are welcome to use those programs instead.

Grading

Grades will be based on problem sets, a short project, and a final exam weighted as

- Problem Sets (40%)
- Short Project (20%)
- Final Exam (40%)

Problem Sets

There will be 5 or 6 problem sets. You may submit the problem sets in groups of up to 5. Problem sets are due a week after they are assigned at the start of class (unless announced otherwise). Late submissions will not be accepted. If you want your problem set re-graded, you must provide a written description of your request to me within one week of the return of the problem set to the class. We will re-grade the entire problem set.

Academic Honesty

Throughout the class, you agree to abide by the University's academic honesty policy.