

## Syllabus

[cmcd.economia@fgv.br]

**Course: Econometrics I**

**Professor:**

**TA:**

## 2025 FIRST SEMESTER

### PROGRAM

- 1) Introduction: in this class, everything we will do will be related to one of these three questions. (1) What do we want to estimate?; (2) How can we estimate what we want?; (3) How can we test hypotheses?
- 2) The populations OLS:
  - a. Conditional expectation function and correlations: an “assumption-free” justification for using OLS.
  - b. Potential outcomes and causality: under which conditions OLS gives us a causal effect?
- 3) Properties of the OLS estimator.
  - a. Algebraic results (projection matrices, partitioned regressions, Frisch-Waugh-Lovell theorem, and so on).
  - b. Finite-sample properties and results (distribution, Gauss-Markov theorem, hypotheses testing, and so on).
  - c. Large-sample properties and results (asymptotic distribution, hypotheses testing, and so on).
- 4) Instrumental Variables.
  - a. Homogeneous treatment effects (identification, asymptotic distribution, hypotheses testing, and so on).
  - b. Heterogeneous treatment effects (identification, asymptotic distribution, hypotheses testing, and so on).
- 5) Maximum likelihood estimator.
- 6) Static panel data.

### BIBLIOGRAPHY

I will not closely follow any book in particular. In addition to my slides and the notes from class, you might find useful to look at:

- Bruce Hansen’s Econometrics textbook (<https://www.ssc.wisc.edu/~bhansen/econometrics/>).
- Greene, *Econometric Analysis*
- Angrist, Joshua D. and Jörn-Steffen Pischke. *Mostly Harmless Econometrics*.
- Wooldridge, *Econometric Analysis of Cross Section and Panel Data*.

## **GRADING**

10% Problem sets  
20% Statistics class  
20% Empirical work  
50% Final Exam

Grade 60 or more: approved  
Grade between 40 and 60: re-evaluation exam  
Grade lower than 40: fail

The re-evaluation exam will take place between April 29rd and May 7th. The final grade in this case will be 60 if the student scores 60 or more in the re-evaluation exam.

## **PROFESSOR - EMAILS**