Bocconi University
Ph.D. program in Social and Political Science 2026-27

40992 - Data Analysis

Instructor: Diogo Britto

Aim of the course
The course provides a general understanding and a critical assessment of modern econometric methods, and data modelling with a focus on the analysis of observational data. The course covers both linear and non-linear estimation methods, and it is designed to bridge both theory and empirical examples, formal and not-formal definitions.

By the end of the course, students should be confident with the most important aspects of econometric theory and able to implement these concepts and methods in an actual empirical setting looking for interesting relationships to study, choosing the most appropriate set of data and econometric techniques, running the analysis and drawing conclusions from that through proper statistical inference.

Topics that will be discussed are:
- Review of estimation theory, and asymptotic theory
- Linear models - OLS estimator and its asymptotic properties
- Maximum Likelihood Estimation
- Panel Data Analysis (Fixed- and Random- Effects models)

Assessment Methods.
The evaluation is based on:
1. Final exam
2. A written empirical project
3. A presentation of the project
4. Completion of empirical exercises using statistical software

The empirical project consists in a short paper/research proposal, and it will be common with the Course of Sociology (40294) and Political Sciences (40291). A presentation of the project is expected to be done towards the end of the course. More details will be provided at the beginning of the Term.

Suggested books
- Agresti, A. (2013). *Categorical data analysis*, 3rd edition John Wiley & Sons
- Angrist, Joshua D., and Jörn-Steffen Pischke. Mostly harmless econometrics: An empiricist's companion. Princeton university press, 2009.
- Cameron, A. C., & Trivedi, P. K. (2005). *Microeconometrics: methods and applications*. Cambridge university press.
- Wooldridge, J. M. (2010). *Econometric analysis of cross section and panel data*. MIT press.

The course will not strictly follow any of these books. You are NOT expected to complete all of the book reading by the exam and you do NOT need to purchase them (available in UB library). All the material relevant is covered in the slides together with additional material that will be distributed during the course.