



UNIVERSITÀ  
DEGLI STUDI DI MILANO-BICOCCA

## SYLLABUS DEL CORSO

### Econometrics I

2324-104R-ECONOM-I

---

#### Title

Econometrics I - The Linear Regression Model

#### Teacher(s)

Prof. Matteo Manera, University of Milano-Bicocca  
Dr. Cristina Cattaneo, European Institute on Economics and the Environment

#### Language

English

#### Short description

University of Milano-Bicocca  
Department of Economics, Management and Statistics (DEMS)

PhD in Economics, Statistics and Data Science (ECOSTATDATA)  
Academic Year 2023-2024  
Cycle XXXIX

## **ECONOMETRICS I – THE LINEAR REGRESSION MODEL**

(Prof. Matteo Manera)

### 1. Introduction

- Introduction to the econometrics courses at ECOSTATDATA
- Structure of the exam
- Notation

### 2. Linear regression model

- The Ordinary Least Squares (OLS) estimator
- Gauss Markov assumptions and small sample properties of the OLS estimator
- Hypothesis testing
- Asymptotic properties of the OLS estimator
- The Generalized Least Squares (GLS) estimator
- Heteroskedasticity tests

### 3. Endogeneity and instrumental variables

- Endogeneity, errors in variables
- The Instrumental Variables estimator (IV) and the Method of Moments (MM)
- The Generalised Instrumental Variables estimator (GIV/2SLS)

### 4. Maximum Likelihood

- The Maximum Likelihood (ML) estimator
- Introduction to ML specification tests

### Proposed references

- Greene, W.H. (2000), *Econometric Analysis*, Prentice-Hall.
- Hayashi, F. (2000), *Econometrics*, Princeton University Press.
- Verbeek, M. (2008), *A Guide to Modern Econometrics*, Wiley.

## **CFU / Hours**

2/18 (lectures)

1/8 (tutorials)

## **Teaching period**

I year - II term

## **Sustainable Development Goals**

QUALITY EDUCATION

---