UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Construction of Socio-Economic Scenarios

2526-1-F6303M003-F6303M003-2

Learning objectives

The course provides students with a core set of statistical and econometric tools for social science applied research.

KNOWLEDGE AND UNDERSTANDING
By the end of the course, students should be able to:

- identify and understand the knowledge questions that lead to the construction of socio-economic scenarios, with particular attention to research and evaluation questions;
- recognize and understand which statistical or econometric methodology is most appropriate to address the knowledge question posed, given the available data;
- understand the differences between various statistical and econometric methods;
- assess whether a methodology is correctly applied to the available data;
- interpret and critically understand the results obtained.

APPLYING KNOWLEDGE AND UNDERSTANDING
By the end of the course, students should be able to:

- define and formulate knowledge questions that lead to the construction of socio-economic scenarios, with a specific focus on correctly framing research and evaluation questions;
- design an empirical strategy to address the knowledge question using available data;
- competently apply basic statistical and econometric methods;
  -demonstrate mastery of appropriate methods for the analysis of economic and social data, at both micro and macro levels, including forecasting;
- use a suitable statistical software to analyze data, also with the support of generative AI tools;
- clearly present and comment on the results of the analysis, also with the support of generative AI.

MAKING JUDGEMENTS
By the end of the course, students should be able to:

- develop a critical attitude toward the methods and results of empirical analyses;
- independently assess the adequacy of a methodology in relation to the research problem and available data;
- identify possible limitations in the results obtained or in evidence-based decision-making processes.

COMMUNICATION SKILLS
By the end of the course, students should be able to:

- clearly and rigorously communicate the steps of an empirical analysis, from question formulation to result interpretation;
- present results in written, oral, and visual formats (tables, charts, summary texts);
- use appropriate language, both technical and accessible, depending on the audience (academic, technical, institutional, or general public).

LEARNING SKILLS
By the end of the course, students should be able to:

- independently update and deepen their methodological and applied knowledge;
- critically use digital resources, manuals, and technical documentation for continuous learning;
- learn how to integrate innovative tools (e.g., generative AI) into the analysis process and in solving complex empirical problems.

Contents

Topics to be covered:

- Simple statistical tools
- Introduction to linear regression and regressions with binary dependent variable.
  -Introduction to panel data analysis .

Detailed program

Topics:

1) Statistical tools:

- collection and organization of information, archives, and tabulations;
- processing of individual data: univariate and bivariate descriptive statistics;
- the representation of statistical relationships, also with the support of generative AI

2) Econometric tools:

- Linear regression with one regressor .
- Linear regression with multiple regressors.
- Regression with binary dependent variable
- Regression with panel data

Prerequisites

Participation to the course requires basic background in statistics.

Teaching methods

- Face-to-face lectures: 50% of the course, 24 hours
- Exercises in lab (exercises, database, software etc.): 50% of the course, 24 hours
- Group and individual assignments

Assessment methods

Students will be graded based on the performance during the course (assignments) and at the final written exam.

Textbooks and Reading Materials

James H. Stock - Mark W. Watson *"Introduzione all’econometria" *5/Ed. •Pearson Ed.

Online video tutorials on Stata (many are available on YouTube).

A detailed reading list will be posted on the course web site

Sustainable Development Goals

GOOD HEALTH AND WELL-BEING | QUALITY EDUCATION | GENDER EQUALITY | DECENT WORK AND ECONOMIC GROWTH | REDUCED INEQUALITIES