UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

SYLLABUS DEL CORSO

Statistica Economica I

2627-1-E4105B008

Learning objectives

The course **Economic Statistics I** introduces undergraduate students in Statistics, Machine Learning, and Economics to the field of **statistics applied to economic and social phenomena, as well as to related contexts such as the environment**.

The course will present the main methods and tools for the statistical representation of the economic system. In particular:

1. Students will be provided with a vocabulary that enables them to understand the actors involved in the economic and social system, such as the government, the productive sector, consumers, financial and credit institutions, and the complex network of interdependencies among them. The course will also emphasize the role that statistics and the measurement of phenomena play in a complex economy and society.
2. The course will rigorously introduce the concepts of national accounting and the main economic aggregates, such as Value Added (VA), Gross Domestic Product (GDP), inflation and deflation, production, and other concepts necessary for understanding and measuring the economy, both at the microeconomic and macroeconomic levels.
3. Analytical tools will be presented for analyzing changes in economic phenomena, such as price trends and inflation, over time and across space through index numbers.
4. The main indices of statistical concentration, such as the Gini index, the Hirschman-Herfindahl index, and the Atkinson index, will also be introduced, as they are useful for understanding economic and social phenomena.

The course will also provide an opportunity to discuss common misinterpretations of economic statistics that may arise in public debate.

Contents

The concise course contents (macro-topics) are as follows:

1. Economic statistics and national accounting
2. The economic circuit and intersectoral transactions
3. Index numbers and inflation
4. Measures of wealth concentration, heterogeneity, and inequality

Detailed program

The detailed course contents are as follows:

1. Economic statistics and national accounting
   Gross Domestic Product (definition, calculation, limitations, and alternative indicators of well-being)
   Value added
   International trade
   The European System of Accounts

2. The economic circuit and intersectoral transactions
   The economic circuit: economic actors and their interrelationships
   Social Accounting Matrices
   Input-output matrices

3. Index numbers and inflation
   Changes over time
   Simple indices
   Composite indices: Laspeyres and Paasche
   Price indices
   Inflation measurement

4. Measures of wealth concentration, heterogeneity, and inequality
   The Gini index and the Lorenz curve
   Poverty and deprivation indices
   The Herfindahl-Hirschman index
   The Atkinson index
   The Human Development Index (HDI) and the Human Capital Index (HCI)

Prerequisites

None

Teaching methods

The course consists of 6 ECTS credits of lectures, corresponding to 42 hours. Some sessions will be held in a

computer lab, depending on availability provided by the university, and will be devoted to further discussion, exercises, and the analysis of real-world case studies. Throughout the course, frequent references will be made to contemporary economic debates.

Assessment methods

The final examination for Economic Statistics I is written and consists of two parts, both of which are mandatory:

1. Screening multiple-choice questions, worth up to 10 points. These questions assess the minimum knowledge required for an adequate understanding of the course.
2. Open-ended questions and/or exercises, worth up to 22 points.

A total written-exam score of 31 or 32 points will be awarded a grade of “30 cum laude.”

The open-ended questions and/or exercises in the second part will be graded only if the score obtained on the screening questions exceeds a minimum threshold corresponding to the basic learning requirements of the course.

Students may request an additional oral examination, to be arranged with the instructor. The oral examination may improve, lower, or leave unchanged the grade obtained in the written examination.

Textbooks and Reading Materials

1. Instructor’s slides and materials, which will cover the entire content of the course.

2. Essential textbooks

- For the theoretical content related to macro-topics 1, 2, and 4: *Compendio di Statistica Economica* (Edizioni Simone). The chapters covered in the course are Chapters 1, 3, 4, and 5. The remaining chapters will be covered in other courses within the same degree program. Students are encouraged to complete the exercises in the chapters indicated above.
- For the theoretical content related to macro-topic 4, namely measures of wealth concentration, heterogeneity, and inequality, the instructor will provide specific materials.

3. Students are encouraged to read a book of their choice on the risks associated with the misuse of statistics. As suggestions, the following books are listed:

- Daniel Levitin, *A Field Guide to Lies and Statistics: A Neuroscientist on How to Make Sense of a Complex World*
- Campbell, *Flaws and Fallacies in Statistical Thinking*
- Reinhardt, *Statistics Done Wrong*
- Blastland and Dilnot, *The Tiger That Isn’t*
- Darrell Huff, *How to Lie with Statistics*
- G. J. Jones, *How to Lie with Charts*

There will be no specific exam questions on this reading, and no additional points will be awarded. The reading is recommended to help students develop a broader statistical culture.

Semester

I semester, II cycle/period

Teaching language

Italian

Sustainable Development Goals

QUALITY EDUCATION