Master in Public Policy and Innovative Governance LM-63

27425 Preparatory course in Statistics

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Frontal lectures, exercises

Language: English

a.y. 2024/2025

The course refers to the complementary educational activities chosen by the students and belongs to the scientific area of Statistics and Probability. The course is designed to acquire or review the core competencies necessary to more advanced topics.

Attendance: suggested, but not required. Students without a background in Statistics and Probability are strongly recommended to attend the "preparatory course" in Statistics and Probability organized at the beginning of the first semester.

Educational objectives: students successfully attending the course will be able to i) explore, visualize, and interpret different types of data by producing graphs and computing numerical data summaries, ii) describe empirical phenomena through probability and random variables, and use basic theorems to manipulate them.

List of topics covered:

- Descriptive Statistics: Frequency tables;
- Summary Statistics (measures of central tendency and dispersion);
- Graphical tools;
- Introduction to bivariate analysis;
- Probability: events, counting rules and classic definition, additive and multiplicative rule, conditional probability and independence;
- Discrete and continuous random variables, probability distributions and expected values;
- Central Limit theorem and its applications.

Learning outcomes:

- Knowledge and understanding: Students learn the basics of probability and statistical theory.

- Applying knowledge and understanding: Students develop the ability to analyze real data by exploiting via tables, graphical tools, and data summaries.
- Making judgments: Ability to describe and discuss specific economic issues with a critical point of view by analysing data or evaluating probabilities.
- Communication skills: Ability to present in a consistent and precise way the results obtained from the statistical or probabilistic analysis.
- Learning skills: Ability to understand and analyse the economic data from a quantitative perspective.

Assessment: A final written exam with both closed and open questions.

➔ The test will have no negative consequences, as it is aimed at making aware students of their own knowledge. In case of "not-passed" outcome, the student could decide with the Lecturer how to improve his/her knowledge.

Required readings:

- P. Newbold, W. L. Carlson, B. M. Thorne, Statistics for Business and Economics – Global Edition, Pearson, New York, 2023, 10th Ed.. ISBN 978-12-924-3684-5. Chapters 1-5.
- Additional teaching material (slides, past exams) will be available on a web folder at the beginning of the course.
- Further readings will be announced during the course

TIMETABLE: click here