STATISTICS PRE-COURSE

MSc in Finance & Banking | MSc in Economics • Tor Vergata University of Rome

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Term: September 2026

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Office Hours: By appointment

Objective

The preparatory course aims to review the fundamental concepts of descriptive and inferential statistics and provide students with all the necessary tools to successfully attend the MSc in Economics and in Finance and Banking.

Attendance is highly recommended for students who do not have a strong background in statistics. Still, it can be an excellent opportunity to review and deepen the understanding of several key issues for students with solid statistical foundations.

Prerequisites: Students should possess foundational knowledge in undergraduate-level calculus and linear algebra.

Programme

Part I: Exploratory & Descriptive Data Analysis

- Foundations of statistical data types & frequency distribution analysis
- Graphical display and visualization of data structures
- Core metrics of central tendency, dispersion, and variability
- Bivariate metrics and measures of statistical association

Part II: Probability Foundations & Distribution Theory

- Random variables (discrete and continuous)
- Expected value, variance, and moments of random variables
- Main probability distributions: Bernoulli, Binomial, Poisson, Uniform, Normal, Exponential, Student-t
- Asymptotic principles: Law of Large Numbers (LLN) and Central Limit Theorem (CLT)

Part III: Inferential Methods & Statistical Modeling

- Principles of statistical modeling and classical inference
- Point estimation
- Interval estimation
- Hypothesis testing

Recommended Textbooks

Cicchitelli, G., D'Urso, P., & Minozzo, M. *Statistics: principles and methods*. Pearson, 2021

Newbold, P., Carlson, W. L., & Thorne, B. *Statistics for Business and Economics.* Pearson, 2012.