

## MOD. I - QUANTITATIVE METHODS

### FACE-TO-FACE CHANNEL

Course Title: **Statistics**

Instructor: Maura Mezzetti - email: [maura.mezzetti@uniroma2.it](mailto:maura.mezzetti@uniroma2.it)

#### Course Overview:

##### Introduction & Univariate Descriptive Statistics

- Types of data
- Graphical representations (bar charts, histograms, boxplots)
- Measures of central tendency (mean, median, mode)
- Measures of variability (range, variance, standard deviation)

##### Bivariate Data Analysis

- Relationships between two variables
- Chi-square tests for independence (categorical data)
- Correlation coefficients (Pearson and Spearman)

##### Probability

- Basic probability concepts
- Events, sample space, addition and multiplication rules
- Conditional probability
- Discrete and continuous random variables
- Common distributions (Normal, t, Chi-square, F)
- Sampling distributions

##### Statistical Inference

- Point estimation and properties of estimators
- Confidence intervals for means and proportions
- Hypothesis testing for means and proportions
- p-values; Type I and Type II errors
- Testing differences between groups
- Applications to development economics datasets

#### Course Content:

The course provides a solid foundation in descriptive statistics, probability theory, and statistical inference, with a strong emphasis on practical applications in political, economic, and social sciences. Students will develop essential skills for analysing both individual-level and aggregated data, enabling them to interpret and critically evaluate quantitative information relevant to development economics and international cooperation.

Hands-on exercises using real-world datasets reinforce theoretical concepts and prepare students for applied data analysis in research and policy contexts.

Duration: 21 hours

Suggested Reading:

Agresti A., Franklin C., *Statistics: The Art and Science of Learning From Data*, Pearson, 3rd International Edition, ISBN 9781447964186

## *MOD. I - QUANTITATIVE METHODS*

### *EXECUTIVE CHANNEL*

Course Title: **Statistics**

Instructor: Isabella Corazziari - email: [isabella.corazziari@uniroma2.it](mailto:isabella.corazziari@uniroma2.it)

#### Course Contents:

The course provides the fundamentals of descriptive statistics, probability calculus, and statistical inference, highlighting applications in political, economic, and social sciences.

#### Course Overview:

Univariate descriptive statistics

- Types of data
- Graphical representations
- Measures of central tendency and variability

Bivariate descriptive statistics

- Contingency tables
- Row and column profiles for conditional distributions
- Correlation and regression

Probability

- Elementary probability rules
- Random variables
- Common families of distributions
- Sampling distributions

Statistical inference

- Point estimation and confidence
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- Hypothesis testing

Duration: 21 hours

Exam: The final exam consists of a written test with theoretical questions and exercises to be completed in 60 minutes. It is a closed-book exam. Students are not allowed to consult any materials or other sources of information (including notebooks, laptops, dictionaries, or mobile phones) during the exam.

#### Suggested Reading:

Agresti A., Franklin C., *Statistics: The Art and Science of Learning From Data*, Pearson, 3rd International Edition (any edition is acceptable)