UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

# COURSE SYLLABUS

# Statistics I - 2

**2526-1-E1806M006-T2**

## Learning objectives

Economic disciplines study a wide range of phenomena, showing often different characteristics. This module introduces the main statistical methods to collect, represent, synthetize and analyze data related to these phenomena. Students will learn how to choose and apply the appropriate statistical method to describe single phenomena and to interpret their relations.

## Contents

The module provides the principal descriptive techniques for data analysis, commonly used with univariate and bivariate data. The module is structured in three main sections. In the first section, students will study the fundamental principles of statistical data collection and the application of statistical methods, while revising key mathematical tools essential for understanding the topics covered in the module. The second part will introduce descriptive tools for univariate statistical analysis, including the representation of data distributions and their examination through location and dispersion measures. The last part of the module focuses on statistical methods for bivariate distributions, presenting the essential tools for their description and introducing regression techniques based on least square methods.

## Detailed program

### Introduction

- The meaning of statistics
- The science of statistics
- Statistical applications

- The branches of statistics

**Descriptive Statistics for Univariate data**

- Data collection
- Formal statistical approaches to analyze the data
- Statistical ratios
- Frequency distributions and graphical representations
- Location measures
- Dispersion measures
- Concentration measures

**Descriptive Statistics for bivariate data**

- Relations among distributions
- Bivariate frequency distributions
- Independence and association measures
- Interpolation methods: the least squares method, the least squares line and its properties
- The regression function and the least square regression line
- Concordance and correlation measures

## Prerequisites

None. In this module the use of concepts of mathematical analysis, such as derivative and integral, is not required.

## Teaching methods

The module will be taught trought traditional method: class lectures and practical session.

## Assessment methods

The exam will be a written test, featuring exercises designed to assess the student's ability to apply the statistical concepts learned throughout the module. The evaluation will also take into account the student's interpretation of the results from the exercises.

## Textbooks and Reading Materials

- M. Zenga “Lezioni di statistica descrittiva”, Ed. Giappichelli, 2014
- M. Zenga “Esercizi di statistica”, Ed. Giappichelli, 1993

## Semester

Second semester

## Teaching language

Italian

## Sustainable Development Goals

QUALITY EDUCATION