UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

# COURSE SYLLABUS

# Biostatistics

**2122-4-H4102D027-H4102D099M**

## Aims

The student will learn:

- the basic tools to understand scientific results in observational and experimental studies with continuous outcome, binary outcome, survival time outcome.
- how to interpret results from regression models relating aforementioned outcome to explanatory/exposure variables.

The student will work on the intepretation of results from scientific papers in cardiologic research in adults and children.

## Contents

- Linear regression
- Logistic regression
- Survival analysis

## Detailed program

Recap on study designs, sampling methods, confidence intervals.

**- Linear regression**

Methodological definition of correlation and linear regression: model formulation, results interpretation, prediction.

Comment on the results of a scientific paper including linear regression analysis.

**- Logistic regression**

Methodological definition of logistic regression: model formulation, results interpretation, prediction.

Comment on the results of a scientific paper including logistic regression analysis.

**- Survival analysis**

Basic theory in survival analysis: complexities of life time data, survival/incidence functions, rate, hazard function, Kaplan Meier estimator, epidemiological rate (exponential) estimator.

Comment on the results of a scientific paper including Kaplan Meier curves and Cox model.

**- Additional content (not mandatory)**

Stata commands to run Linear regression, logistic regression, Kaplan Meier analysis.

**Time Table**

- Lecture 1
- Quiz on Lecture 1
- Lecture 2
- Quiz on Lecture 2
- Lecture 3
- Quiz on Lecture 3 (optional)
- Lecture 4
- Quiz on Lecture 4
- Lecture 5
- Quiz on Lecture 5
- Lecture 6
- Quiz on Lecture 6

## Prerequisites

- Basic descriptive and inferential statistics.
- Basic use of Stata software.

## Teaching form

Standard synchronous classes and and video-clips.

## Textbook and teaching resource

- Book "Biostatistics for Biological and Health Sciences" - chapter 1 (section 3), chapter 10 (from section 2 to 5) and chapter 14.

- You can borrow the e-book here https://www.biblio.unimib.it/it in the section "curiosone"
- You can buy the paper back book here https://www.pearson.com/uk/educators/higher-education-educators/program/Triola-Biostatistics-for-the-Biological-and-Health-Sciences-Global-Edition-2nd-Edition/PGM1964951.html

- Quiz (mandatory for self assessement).

Slides (related to the book).

- Scientific papers.

## Semester

First semester.

From 10 to 12, LAB1811 U18 Monza, Dates: 11-18-25 Oct, 29 Nov, 10 Dec

## Assessment method

On esamionline.elearning platform. Type of test: multiple choice/open questions (11 questions, 3 points for each correct answer, no penalties for wrong answers). If the total score is >=18 you pass.

## Office hours

Under request by the elearning email, in the Webex room of the teacher https://unimib.webex.com/meet/laura.antolini