



UNIVERSITÀ  
DEGLI STUDI DI MILANO-BICOCCA

## COURSE SYLLABUS

### Medical Statistics

2324-1-E4102B054

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#### Learning objectives

The aim of the course is to provide the fundamental tools to understand the main characteristics of the statistical method in the biomedical research area. At the end of the course, the student will be able to calculate measures of frequency of a disease and the association with the outcomes, and to apply a procedure of direct/indirect standardization. Moreover, the student will recognize the main differences between experimental and observational studies.

#### Contents

1. The role of statistical sciences in the scientific research
2. The frequency of the disease and of its outcomes
3. Common techniques
4. The scientific research between experiment and observation
5. Randomized clinical trials
6. Observational studies

#### Detailed program

The role of statistical sciences in the scientific research

- Natural history of the disease
- Clinical approach to disease
- Public health approach to disease
- Statistical approach to disease

The frequency of the disease and of its outcomes

- Incident and prevalent cases
- Fixed cohort and dynamic population
- Rates and proportions

Common techniques

- Direct and indirect standardization
- Analysis per cohorts
- Perinatal mortality

The scientific research between experiment and observation

- The concept of causality
- Experimental research
- Observational research

Randomized clinical trials

- The steps of the experimental research
- Within-subjects designs
- Between-subjects designs

Observational studies

- Correlation studies
- Cohort studies
- Case-control studies

## **Prerequisites**

No prerequisites needed

## **Teaching methods**

Lectures/Tutorials

## **Assessment methods**

The exam consists of a written exam (practical exercises) and of an oral exam (if requested by either the teacher or the student).

## **Textbooks and Reading Materials**

The teaching material will be available on the e-learning platform (slides of the lectures, exercises).

## **Semester**

II semester, II period (approximatively from May to mid June)

## **Teaching language**

Italian

## **Sustainable Development Goals**

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