UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Medical Statistics

2324-1-E4102B054

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 excercices) 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