



UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

2627-2-F8205B015-F8205B015-1

Learning objectives

The course aims to provide fundamental concepts and tools for planning and statistically interpreting an epidemiological study that addresses clinical questions posed by the IRCCS. The IRCCS will supply real data to help answer these clinical questions. By the end of the course, students should be able to write a research protocol effectively, differentiate between various study designs, and contribute to the statistical analysis in a research report. Additionally, practical exercises, primarily conducted using SAS, are included for certain topics.

Knowledge and understanding

This course will provide knowledge and understanding of:

- Epidemiological reasoning
- How to design an epidemiological study
- How to apply standard analyses in an epidemiological study

Applying knowledge and understanding

By the end of the course, students will be able to:

- Critically read the results of an epidemiological study
- Correctly analyze real data
- Interpret summary measures using concise, technical language

Contents

The protocol of an epidemiological research

Main approaches to analyze data from an epidemiological study

Development of a project to answer IRCCS clinical questions

Detailed program

The main epidemiological measures of frequency
The main epidemiological measures of association
Confounding and effect modification
Matching
Logistic regression
Extension of logistic regression: conditional logistic regression
Extension of logistic regression: ordinal logistic regression
Repeated measurements analysis
Multi-state models
Dose-response relationship
Predictive models
Redcap
Development of a project to answer clinical research questions of IRCCS

Prerequisites

No formal prerequisites

Teaching methods

Lectures and computer lab classes on real data. The first half of the course will consist of alternating lectures and computer lab exercises. The other half will involve research activities conducted by students in the lab under the instructor's supervision.

Assessment methods

The final test will consist of two phases. First, each working group will present a short seminar based on their practical activity, structured like a scientific article. This structure should include an introduction to the problem, a description of the materials and methods used, the main results, a discussion, and conclusions.

The grade for the seminar will assess students' organizational and communication skills, the clarity of their presentation, the accuracy of the statistical methods used, and the soundness of the conclusions drawn from their analyses. Each group member will be asked questions to assess their individual contributions to the project.

For students who are unable to attend, limited datasets and a specific research question will be provided by the instructor. Please reach out to the instructor to discuss the details.

Textbooks and Reading Materials

Students attending and non attending the course

Slides from <http://elearning.unimib.it/>. Other material will be provided by the teacher

Semester

II semester, I period (from march to may).

Teaching language

The language of the course is the Italian. The materials for the seminar (bibliographic research, research of data form national or international sites, etc) are in English language

Sustainable Development Goals

GOOD HEALTH AND WELL-BEING | QUALITY EDUCATION
