UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Epidemiology

2324-3-E4102B020

Learning objectives

The course aims to provide the basic concepts and the tools for the planning and the statistical interpretation of an epidemiological study. At the end of the course students should be able to properly set the level of an epidemiological study, to orient oneself between different observational designs and to provide a statistical contribution to the writing of a research report. For some topics are planned practical exercises conducted mainly with language SAS.

The course allows to acquire a solid foundation in the application of statistics to the biostatistic context.

Knowledge and understanding

- The epidemiological rationale
- The epidemiological measures and designs
- The main errors of epidemiological studies

Applying knowledge and understanding

- Critical appraisal of an epidemiological study
- To analyze data from an epidemiological study
- To comment with technical epidemiological language the epidemiological measures

Contents

Overview of observational study designs

Measures of occurrence of disease, association and potential impact

Introduction to bias and methods to control it

Single-topic lessons

Detailed program

Concept of cause in epidemiology

Observational methods in epidemiology

Ecological studies; ecological fallacy, geographic and temporal correlation studies

Analytical studies; cohort studies (rational, follow-up, latency time; case-control studies (rational, selection of cases and controls); other studies (case-cohort and casecontrol nested in the cohort)

Measures of occurrence of disease. Measures of association. Measures of potential impact

Validity and accuracy of the estimates: selection bias, ,misclassification bias (differential and non-differential) and confounding

Exact and approximate methods for interval estimation of epidemiological measures

Introduction to meta-analysis

Introduction to pharmacoepidemiology

Methods for infective diaseases

Prerequisites

For this course it’s necessary to pass the following exams: Statistica I and Medical statistics

Teaching methods

Lectures and computer lab classes

If an emergency period should occur, lessons will also take place in synchronous videoconferencing.

Assessment methods

Final test mode for attending students

The final test will consist of two moments. In the first moment (basically the same for all) the working groups will

present a short seminar of the practical activity carried out organized as a scientific article: introduction to the problem, materials and methods used, main results, discussion and conclusions. Each member of the group will have about 5 minutes available to comment the slides produced. The vote attributed to the seminar will summarize the students' organizational and communication skills as well as the clarity of exposition and the correctness of the statistical methodologies used and the conclusions drawn from the analyzes. At a later stage, each student will hold an oral exam in which the knowledge of the topics covered in the course will be checked (with less emphasis on those already dealt with in the student's seminar) as well as the ability to communicate with an appropriate technical language and the ability to reason in particular scenarios proposed by the teacher. Even the oral will produce a vote. The final grade awarded to the student will be an average of the seminary and oral examination vote provided both are sufficient.

Final test mode for non-attending students

The final exam will be identical to that of the attending students for the oral exam. The seminar will be replaced by an individual in-depth study (paper) on a topic chosen by the student among those dealt with in the course. The paper will have a theoretical and / or practical cut. The essay must be sent to the teacher at the same time as the oral exam. The final grade awarded to the student will be an average of the exam paper and oral exam, provided both are sufficient.

If an emergency period should occur, the oral exams will be online and will generally be carried out using the WebEx platform. A public link will be provided on the e-learning page of the course for access to the examination.

Textbooks and Reading Materials

Students attending the course

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

Students non attending the course

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

Semester

I semester, II period (from November to January).

Teaching language

The language of the course is the Italian. The work for the seminar (bibliographic research, research of data form national or international sites, etc) and the online self-evaluations are in English language

Sustainable Development Goals

QUALITY EDUCATION