UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Methods in Clinic and Epidemiologic Research (e-learning) (blended)

2122-1-F8203B001

Learning objectives

The objectives of the course are: to introduce the uncertainty of the diagnostic process; to critically examine the measures available in the scientific literature about the validity of the diagnosis, the clinical discordance, the frequency of diseases and of outcomes, the association between exposures and risk of disease, as well as the efficacy and clinical impact of treatments. Moreover, the methodological aspects related to the different study designs will be examined in depth in order to acquire the expertise for critically reading the medical scientific literature and writing a protocol of both experimental and observational studies and meta-analyses.

Contents

1. Uncertainty of the diagnostic process
2. Frequency of clinical events
3. Random and systematic errors of diagnostic measures
4. Observational and experimental studies
5. Meta-analyses

Detailed program

1. Uncertainty measures of the diagnostic process
Uncertainty of the diagnostic process

Operative characteristics of a diagnostic test
Predictive values of a diagnostic test
Multiple tests
Agreement between clinicians

2. Measures of frequency of clinical events and their predictors
Incidence and prevalence
Measures of incidence
Measures of association
Measure of impact
The efficacy of treatments

3. Random and systematic errors of clinical measures
Precision of measures
Validity of measures
The role of confounding

4. **Observational and experimental studies**
Cohort studies
Case-control studies
Experimental studies

5. Systematic reviews and meta-analysis
Introduction to systematic reviews and meta-analysis, from data source to meta-analytic estimates by using fixed- or random effect models. Introduction to the main methods for taking into account bias. Guidelines: from the systematic search of the literature to the formulation of the recommendations adopted in clinical practice.

Prerequisites

No formal prerequisite required.

Teaching methods

E-learning/Frontal lectures.
The major part of the course will be provided through the e-learning platform of the University. Teaching material will be regularly uploaded (lectures, scientific papers, readings and other in-depth material) on the online course page. Moreover, at the end of each of the five sections the course is divided in, a frontal lecture is scheduled in order to resume and to clarify the main subjects of the course.

Assessment methods

The exam consists of a final oral exam, during which students will be invited to discuss with the teacher the main subjects of the course, with the aim of verifying whether they have achieved the objectives that the course was intended for.

At the end of each section of the course, after the frontal lesson of the relative section, an assignement (i.e. exercises and theorical questions, depending on the topics covered by the relative module) will be uploaded by the teacher on the e-learning platform. Students will have to perform the assignemetn and to upload it on the platform. Each assignement will be scored from 1 to 5. Assignements are intended for the teacher to monitor the grade of

attendance of the students and to verify learning abilities. However, the final oral exam is not restricted to students who completed all the assignements.

Textbooks and Reading Materials

There is no specific reference text.
For each argument of the course, the teaching material will be available on the e-learning platform (slides of the lectures, exercises, scientific papers).

Semester

I Semester (Ciclo I-II) and II Semester (Ciclo III-IV)

Teaching language

Italian