

# UNIVERSITÀ DEGLI STUDI DI MILANO-BICOCCA

# SYLLABUS DEL CORSO

## **Statistica Medica**

1718-4-H4101D019

### Aims

Concepts of uncertainty in medicine and basic notions on probability, probability distributions and random variables (examples of Gaussian and Binomial distribution); sensitivity, specificity and predictive value of a test and their use in the diagnostic process; different types of studies in clinical research; concepts of statistical inference; statistical tests for means and proportions; confidence intervals; basic concepts of sample size calculation; basic concepts of linear regression and correlation.

#### Contents

The course provides the medical school student with the main concepts and the basic tools of medical statistics that are at the basis of a proper methodological approach to a research project in medicine. The aim is to convey those notions that, both in the course of the studies and in the professional life of the students, will help the clinician to critically evaluate the scientific evidence provided by clinical research.

#### **Detailed program**

- RANDOM VARIABLE AND PROBABILITY DISTRIBUTION

VARIABLES AND PROBABILITY DISTRIBUTIONS: definitions of probability; conditional probability and

independence; probability distributions and random variables (examples of Gaussian and Binomial distribution; reference values

DIAGNOSTIC PROCESS EVALUATION: sensitivity, specificity; clinical decision: probability as uncertainty measure; predictive value of a test (Bayes theorem).

EVALUATION OF RESULTS IN A CLINICAL STUDY:

population parameter, sample estimate and standard error; confidence intervals; statistical hypothesis test, significant level and power; application of a statistical test, p-value; sample size calculation; statistical inference; comparison among groups and result interpretation; basic concepts of regression and correlation; different types of studies in clinical and epidemiological research, observational and experimental studies; efficacy measures (relative risk, odds ratio).

#### Prerequisites

propedeutical courses

#### **Teaching form**

Lectures and tutorials

#### Textbook and teaching resource

Glantz S.A. Statistica per discipline bio-mediche Mc Graw - Hill, 2005

Bland M. Statistica medica Apogeo Editore, 2009 Bossi A., Cortinovis I. Statistica medica. Esercitazioni Città Studi Edizione, 1996

Altri testi suggeriti: Valsecchi M.G., La Vecchia C. Epidemiologia e Metodologia

epidemiologica clinica Forum Service Editore, 1999

#### Semester

4th year - 1st semester

#### **Assessment method**

Written exam

### Office hours

on request by e-mail