



UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Data Analysis

2526-3-E3303M024-E3303M030M

Learning objectives

The course aims to present to students the statistical methods, that are typically applied to multivariate data.

Knowledge and understanding: the theoretic lectures will make the student to know and understand the meaning of multivariate statistical techniques in program.

Applying knowledge and understanding: basing on the theory, several case studies will be presented and carefully interpreted to make the student to understand the applicative relevance of the statistical topics in program.

Making judgements: the careful comment of the generated output about several data-sets will allow thw student to make judgements, by evaluating the informative relavance and knowledge in taking decisions concerning the treated problems.

Communications skills: cause the choosen way of evaluation in exam, the student will be able to write a scientific report in communicative and clear way.

Learning skills: cause of the several statistical analyses presented in the course, the student will acquire, throug learning, the necessary expertise in analyzing data.

Contents

Multivariate statistical data analysis

Detailed program

- Multiple linear Regression
 - Principal Components Analysis
 - Cluster Analysis
 - Discriminant Analysis
- Correspondences Analysis

Prerequisites

Elements of asymptotic inference and descriptive statistics

Teaching methods

28 hours of theoretical lectures, 4 cfu, in physical presence. 20 hours in erogative way (theoretical lectures about the topics in program), and 8 in interactive way, which consist in showing and carefully commenting in classroom in deep and interactive way several case studies, scientific papers and nontrivial data analyses.

Assessment methods

A paper (report), written in ENGLISH or in ITALIANO on an application on a data set of one or two tools presented in the course, by producing, in SPSS software, the output and developing a punctual comment on it. Then, the student will have a theoretical talk about the course program.

Following the guidelines for writing the syllabus, the exam consists of a CASE ANALYSIS, the description of a real situation or example of which the connection between different elements are discussed and analyzed with respect to one or more technical paradigms.

the scientific report will be written as the reader knows the statistical theoretic topics, according to the following steps:

1. introduction and presentation of the data-set
2. careful discussion of the main output generated by the multivariate techniques employed in the program
3. scientific conclusions of the analysis.

The evaluation will concern:

- the completeness of the work, basing on the pdf "linee guida per la stesura del report"
- the accuracy in evaluating the whole possible statistical information and degree of scientificity of the obtained conclusions.

Textbooks and Reading Materials

In italian:

Slides in e-learning website

In english:

- G. Chow, ECONOMETRICS, Mc Graw Hill,

chapter on "general linear regression", only

- W. Hardle, L. Simar APPLIED MULTIVARIATE STATISTICAL ANALYSIS, Method & Data Technologies ed.

chapters 11, 14, 15, 22 (in 2019-20 edition)

Semester

Second Semester

Teaching language

Italian

Sustainable Development Goals

GOOD HEALTH AND WELL-BEING | QUALITY EDUCATION | AFFORDABLE AND CLEAN ENERGY | DECENT WORK AND ECONOMIC GROWTH | INDUSTRY, INNOVATION AND INFRASTRUCTURE | SUSTAINABLE CITIES AND COMMUNITIES | RESPONSIBLE CONSUMPTION AND PRODUCTION | CLIMATE ACTION | PEACE, JUSTICE AND STRONG INSTITUTIONS
