UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Statistics III

2425-3-E4101B035

Learning objectives

The aim of the course is to enrich the concepts and methods introduced in the course “Multivariate Statistical Analysis” by illustrating the main nonlinear regression models. At the end of the course students are expected to specify correctly a nonlinear regression model, apply inferential statistical techniques and perform real data sets analyses using the R software.
The course contributes to achieve the educational objectives of the area "Statistics" of the degree program.

Contents

Generalized linear models and nonparametric regression.

Detailed program

Generalized linear models:
- Foundations
- Inference
- Diagnostics
- Continuous, binomial and count response models

Nonparametric regression:
- Foundations
- Kernel and local polynomial regression

Prerequisites

Knowledge of the notions given in the course "Multivariate Statistical Analysis” is required.

Teaching methods

Class lectures and lab sessions.
There will be a total of six lab lectures, which will be conducted remotely.
The remaining lectures will be held in person.

Assessment methods

Students are supposed to pass a written exam which consists of two parts: the first about theory and the second about a data set analysis. The overall mark is obtained by averaging the marks obtained in each part. The oral exam is optional; if it is requested (by the student or by the teacher), the final mark is obtained by averaging written and oral marks.
The exam is closed-notes and closed-book, but students are allowed to use the R scripts made available by the teacher.
No phones are allowed during the exam.

Textbooks and Reading Materials

- Hardin J.W., Hilbe J.M., Generalized Linear Models and Extensions, Stata Press, 2007
- Dobson A.J., Barnett A.G., An Introduction to Generalized Linear Models, CRC Press, 2008
- Azzalini A., Bowman A.W., Applied Smoothing Techniques for Data Analysis, Clarendon Press, 1997

Further material (R scripts and past exams) will be circulated via the e-learning page of the course.

Semester

The course is scheduled in the first term (six weeks) of the first semester.

Teaching language

Italian

Sustainable Development Goals

QUALITY EDUCATION