UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Statistics III

2021-3-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.

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.

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.

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 part (six weeks) of the first semester.

Teaching language

Italian