

40998 APPLIED MULTIVARIATE ANALYSIS

PhD in Statistics, Bocconi University

a.a. 2026/2027

Instructor

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Course Description

The course focuses on the extraction of information from data collected on a relevant number of variables and cases, and illustrates the basic relevant techniques of data analytics, with specific reference to unsupervised learning. The key goal of the course is to illustrate methods useful to analyse and summarize the most salient features of data sets with respect to both the variables and the cases.

Content Summary

The course introduces exploratory techniques to efficiently analyse, summarize and visualize data collected on (relatively) large sets of data. The goal is to reduce the dimension of data while preserving information about the most salient/distinctive features. Such simplification applies both to variables and to cases.

After introducing the key concepts related to multivariate samples, the course covers techniques to summarise variables, that is, Principal Components and Factor analysis, as well as techniques to summarise cases based on multiple variables, that is, cluster analysis. Finally multidimensional scaling and related approaches are presented to estimate factors underlying non-Euclidean distances.

Exam

Oral presentation