Statistical and Machine Learning (61220)

Instructors: I.PAPAGEORGIOU

Elective Course, 3rd semester, 5 ECTS units
Course level: Graduate (MSc)
Language: Greek

Course Description
Module refers to methods fo extracting information from data with the use of statistical and computer aids. A wide range of methods are included aiming to deal with the problem of clustering, data dimension reduction, such as principal components analysis, classification, and factor analysis. Methods included in the module belong to either statistical or machine learning scientific area. The presentation of the methods includes the methodological background, their implementation in R and how to interpret and assess the derived information.

Prerequisites
Multivariate analysis. Statistical inference.

Target Learning Outcomes
Upon completion of the course, students will have the knowledge and the skills to implement statistical methods aiming to deal with the problem of classification, data dimension reduction, factor analysis and clustering. They will be able to interpret the results and assess the methodologies' performance.

Recommended Bibliography

- Hastie, Tibshirani and Friedman (2009) Elements of Statistical Learning, 2nd edition Springer
- James, Witten, Hastie and Tibshirani (2011) Introduction to Statistical Learning with applications in R, Springer
- B. S. Everitt, S. Landau, M. Leese, and D. Stahl (2011) Cluster Analysis, Fifth Edition, Wiley

Teaching and Learning Activities
Face to face teaching covering theory and practice. The practicals are implemented with R.

Assessment and Grading Methods
Written exam and projects.