

Applied Multivariate Techniques

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PhD Course, XXXVII cycle

Course Description

This course provides a quick review of the most common multivariate techniques. Topics include: dimension reduction, classification, clustering. The course will also try to touch some modern data analysis techniques, through the development of small projects.

Objectives

The objectives of this course are:

- to learn some of the traditional tools for analysing multidimensional data;
- to get hands-on experience in using some of these techniques, through the development of a small project.

Schedule

16	December	11.30-13.00	Introduction to the course
16	December	14.30-16.30	Self assessment and lab
9	January	11.30-13.00	Principal component analysis (Chapter 10 ISLR)
9	January	14.30-16.30	Principal component analysis: lab
16	January	11.30-12.30	Classification (Chapter 4 ISLR)
16	January	14.30-16.30	Classification: lab
23	January	11.30-13.00	Tree-based methods (Chapter 8 ISLR)
23	January	14.30-16.30	Tree-based methods: lab
31	January	11.30-13.00	Unsupervised learning (Chapter 10 ISLR)
31	January	14.30-16.30	Unsupervised learning: lab

Recommended texts

- James, G., Witten, D., Hastie, T., Tibshirani, R. (2013). *An Introduction to Statistical Learning : with Applications in R.*, New York :Springer.
- Hastie, T., Tibshirani, R., and Friedman, J. (2009). *The Elements of Statistical Learning: Data Mining, Inference, and Prediction*, 2nd edition, Springer.
- Mardia, K.V., Kent, J.T., and Bibby, J.M. (1979). *Multivariate Analysis*, Academic Press.

Final Exam

Written test: February 5 h.11.00-13.00

Poster session: February 27 h. 11.00-13.00