

## Seminar of Statistical Softwares

### Objectives

The seminar introduces two important statistical softwares: R and SAS. In the end of this seminar, the students should be able to use these two softwares, to interpret and analyse an output.

### Contents

#### 1. An introduction in R

- The uses of R, R objects, vectors, matrices, lists, data frames.
- Looping, graphics, random numbers, functions.
- R packages.
- Simple examples of statistical analyses (simple regression, multiple regression, generalized linear models, anova).

#### 2. An introduction in SAS

- The uses of SAS, the SAS windows, and the SAS language.
- Methods to input data into SAS, to create and modify SAS data sets.
- Flow control statements, random numbers, specific procedures, macros.
- Simple examples of statistical analyses (simple regression, multiple regression, generalized linear models, anova).

### Evaluation

According curriculum 2010-2011 :

- CC : Continuous assessment - one practical assesement within-semester and an end-of-semester practical examination (2 hours).
- *Reexamination session (September)* : practical exam (2 hours).

### Textbooks

Recommended books

For R:

- Peter Dalgaard, *Introductory Statistics with R*, Springer, 2002.
- Michael J. Crawley, *Statistics, An Introduction using R*, Wiley, 2005.
- Brian Everitt, *An R and S-plus Companion to Multivariate Analysis*, Springer, 2005.
- Julian J. Faraway, *Linear Models with R and Extending the Linear Model with R: Generalized Linear, Mixed Effects and Nonparametric Regression Models*, Chapman & Hall /CRC, 2004 and 2005.

For SAS:

- G. Der and B. S. Everitt, *A handbook of statistical analyses using SAS*, Chapman & Hall / CRC, 2002.
- R. Cody, *Learning SAS by Example: A Programmer's Guide*, SAS Publishing; Pap/Cdr edition, 2007.
- M. G. Marasinghe and W. J. Kennedy, *SAS for Data Analysis*, Springer. 2008.

### Characteristics

- ECTS credits
- Compulsory course for master in statistics
- Autumn Semester
- Course + practical exercises on computer: 2 hours
- Prerequisite : no

### Teaching team

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