Institute of Statistics

STAT2430B Statistical Computing

[14h+14h exercises] 4.5 credits

This course is taught in the 1st semester
Language: French
Level: Second cycle

Aims

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At the end of this course, the students will have gain a critical view of the different classes of statistical software available on the market and basic culture on statistical algorithms and graphics. They will also be able to realise basic statistical analysis with different software (SAS, S-Plus, R, Excel, SPSS...) and write programs in the S and SAS programming languages.

Main themes

PART B : Algorithmic and advances software (4.5C) (14h-14h)
- Random numbers generation, calculation of probabilities and quantiles for most common statistical distributions.
- Algorithms to estimate linear and non linear models and associated numerical problems.
- Maximum likelihood estimation.
- Introduction to resampling methods
- Programming in the S language under the S-Plus or R environment.
- Programming in SAS (Use of SAS/BASE, SAS/STAT and SAS/Graph).

Content and teaching methods

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Other information (prerequisite, evaluation (assessment methods), course materials recommended readings, ...)

Prerequisites
Basic course in statistics and capability to work on a personnel computer.
Teaching materials
See web site : www.stat.ucl.ac.be/cours/stat2430
References :
W.S. Cleveland [1985] , The elements of graphing data,
F.C. Dilorio [1991] , SAS Application Programming, A Gentle Introduction, Duxbury Press.
Kennedy and Gentle [1980] , Statistical Computing, Marcel Dekker
Preud'home E. [1996] , SAS 6.10, Cours IUT II Grenoble.
Rubinstein [1981] , Simulation and the Monte Carlo Method, Wiley.
Seber G. et R. Wild [1989] , Non Linear Regression, Wiley.
S-Plus User's Manual, Statsci, Mathsoft Inc., Seattle.

Other credits in programs

FSA12BA Deuxième année de bachelier en sciences de l'ingénieur, (4.5 credits)
orientation ingénieur civil