

Computer Experiments and Experimental Design



ECTS
3 crédits



Hourly volume

Introducing

Objectives

At the end of this module, the student will have understood and be able to explain (main concepts):

- The main methods of experimental design
- Metamodelling for optimization / uncertainty quantification of a computer code
- At least the two main families of metamodels : chaos polynomials and Gaussian processes
- Kernel customization to account for external knowledge
- Design of computer experiments
- Global sensitivity analysis

The student should be able:

Experimental Design part.

-Plan an experiment in the framework of a linear model
Computer Experiment part.

-At a theoretical level, to do computations for:

-covariance kernels and Gaussian process

-ANOVA decomposition, Sobol indices

-At a practical level, to perform the complete methodology for analyzing a computer code

-design of experiments

-metamodel construction / evaluation

-application to optimization / uncertainty quantification of a computer code

Necessary prerequisites

Statistical modelling

Softwares and Methods of Statistical Exploratory Data Analysis

Gaussian vectors.

Practical info

Location(s)

Toulouse