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 sensivity 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