MATHÉMATIQUES ADAPTÉES II : PROBABILITÉS STATISTIQUE

ADAPTED MATHS II : PROBABILITY THEORY AND STATISTICS

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| Lecturers : 14.0 | TC : 16.0 | PW : 0.0 | Autonomy : 0.0 | Study : 0.0 | Project : 0.0 | Language : FR

Objectives

This first part of the course deals with the modelling with random variables. We introduce the notion of density. Some methods of probability calculus, approximations and asymptotic theorems are studied. A important part of the course is devoted to the numerical simulation with MATLAB. The second part of the course deals with statistics. The notions of estimators and tests are introduced. A chapter is devoted to linear regression.

Keywords : Probability laws, Random variables with density, numerical simulations, estimators, parametric tests, linear regression.

Programme

1) Random Variables (Probability, density, distribution function)
2) Mean, Variance
3 Random vectors
4) Asymptotic theorems
5) Estimators
6) Estimators with confidence intervals
7) Statistical tests
8) Linear Regression

Learning outcomes

- Doing some calculus with computers.
- Simulations with MATLAB.
- Be able to run numeric calculus to solve statistical inference problem.
- Be able to construct and analyse a linear regression.

Independent study

Objectifs : First steps in random simulation with MATLAB.

Méhodes : Exercises and previous tests.

Core texts

GilBErT SaPorTa. , *PROBABILITÉS, ANALYSE DES DONNÉES ET STATISTIQUE*, Technip, 2011
Jean-Pierre Lecoutre *STATISTIQUE ET PROBABILITÉS*, coll. Eco Sup. Dunod, 2012
Mario Lefebvre*PROBABILITÉS, STATISTIQUES ET APPLICATIONS.*, Presse Internationales Polytechnique, 2011

Assessment

Final mark = 75% Knowledge + 25% Know-how
Knowledge = 100% final exam
Know-how = 100% continuous assessment