

Probabilities and statistics

Introducing

Description

- Random variables (discrete or continuous) and their characteristics
- Multidimensional random variables, conditional distributions and independence
- Limit theorems (LLN and CLT) and approximation of laws
- Statistical estimation, both punctual and using confidence intervals
- Statistical test for mean.

Objectives

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

- what a random variable (discrete or continuous) and its characteristics are
- how to apply limit theorems such as the Law of Large Numbers (LLN) or the Central Limit Theorem (CLT)
- the notion of statistical estimation
- the notion of statistical test.

The student will be able to:

- to determine the law of a random variable, to compute its expectation, variance, cumulative distributive, etc
- to study the independence of random variables
- to approximate distributions by using underlying limit theorems
- to estimate using confidence intervals some unknown

parameters (expectation, variance, proportion) associated to a large population
- perform a statistical test for a mean.

Necessary prerequisites

Analysis I and Analysis II

Évaluation

L'évaluation des acquis d'apprentissage est réalisée en continu tout le long du semestre. En fonction des enseignements, elle peut prendre différentes formes : examen écrit, oral, compte-rendu, rapport écrit, évaluation par les pairs...

Practical info

Location(s)

 Toulouse