Summary
A basic course in probability and statistics

Content
Revision of basic set theory and combinatorics.
Elementary probability: random experiment; probability space; conditional probability; independence.
Random variables: basic notions; density and mass functions; examples including Bernoulli, binomial, geometric,
Poisson, uniform, normal; mean, variance, correlation and covariance; moment-generating function; joint distributions,
conditional and marginal distributions; transformations.
Many random variables: notions of convergence; laws of large numbers; central limit theorem; delta method;
applications.
Statistical inference: different types of estimator and their properties and comparison; confidence intervals; hypothesis
testing; likelihood inference and statistical modelling; Bayesian inference and prediction; examples.

Learning Prerequisites
Required courses
Analyse I, II
Algèbre linéaire

Teaching methods
Ex cathedra lectures, exercises and problems

Assessment methods
Mid-term and final exams

Resources
Bibliography
Aussi disponible en traduction française (PPUR): 'Initiation aux probabilités'.
A polycopié of the course notes, with the problems etc., will also be available.

Prerequisite for
Electrométrie, Théorie du signal, Télécommunications, Information et codage, Fiabilités, ...