

Intended Learning Outcomes

The purpose of this refresher course is to recall the basic notions and results of the probability theory used in probability, statistics, and econometrics courses of the M1 program.

Course content

1. Basic notions of probability: sample space, events, probability measure.
2. Examples of probability spaces, discrete probability space, combinatorial problems, counting rules.
3. Independence and conditional probability, theorem of the total probability, Bayes' theorem.
4. Random variables. Definitions and examples of discrete and absolutely continuous distributions such as Bernoulli, binomial, Poisson, uniform, exponential, normal.
5. Expectation, general moments, characteristic function.
6. Random vectors. Joint distribution, moments. Gaussian vectors.
7. Conditional distribution and expectation.

Prerequisite

Basic mathematical calculus, including derivative and integration.

Bibliography

Konrad Menzel: Introduction to statistical methods in economics
(MIT Open Course Ware: <https://ocw.mit.edu/courses/economics/14-30-introduction-to-statistical-methods-in-economics-spring-2009/>),

Robert B. Ash: Basic probability theory,

or any other textbook on basic probability theory at your disposal.