Summary
Introduction to notions of probability and basic statistics.

Content
- Descriptive statistics
- Combinatorics
- Probability density and cumulative distribution function
- Conditional probability and independence
- Law of total probability, Bayes’ rule
- Discrete random variables, expected value and variance
- Discrete laws: binomial, Poisson
- Continuous random variables, expected value and variance
- Continuous laws: uniform, normal, exponential
- Transformations of random variables, standardization
- Joint distributions
- Central Limit Theorem
- Confidence intervals
- Maximum Likelihood estimation
- Introduction to hypothesis testing

Learning Outcomes
By the end of the course, the student must be able to:
- Demonstrate understanding of course material
- Apply understanding to exercise/real life scenarios

Transversal skills
- Use a work methodology appropriate to the task.

Teaching methods
Lectures and group exercises
Expected student activities
Students should be prepared to participate in their learning by participating during lecture, asking questions, and contributing to exercise sessions.

Assessment methods
Midterm test and written exam

Resources
Bibliography
- A first course in probability (Initiation aux probabilités) / Ross
- Introduction à la statistique / Morgenthaler

Ressources en bibliothèque
- Initiation aux probabilités / Ross
- Introduction à la statistique / Morgenthaler