

Probability and Stochastic Processes

Objectives

The student is able to master the basic tools from probability theory and stochastic processes that are useful in numerous applications

Contents

1. Probability space – Random events - sigma fields- Probability – Conditioning and Independence.
2. Countable state space – Random variables – Law of Random variables- Usual laws (Binomial, Poisson, Geometrical)
3. Real random variables and random vectors – Laws and densities - Usual laws (exponential, Gaussian).
4. Convergence of random sequences – Law of large numbers - Monte-Carlo Methods
5. Gaussian vectors - Convergence in distribution - Limit central Theorem – Statistical applications.
6. Random interactive models – Elementary Markov chains theory - Branching processes –

Evaluation

According curriculum 2010-2011 :

- CC : 2-hour written test during the last week of the semester (70% of the grade) and exercises (30 % of the grade).
- *Reexamination session (september) : 2h written test*

Textbooks

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Characteristics

- 6 ECTS credits
- Compulsory course for master in statistics
- Autumn Semester
- Course : 2 hours / Exercises : 2 hours
- Prerequisite : calculus

Teaching team

- *Prof. Michel Benaim*
Institut de Mathématiques,
Université de Neuchâtel
✉ email : michel.benaim@unine.ch
- *Regis Houssou*, assistant-doctorant
Institut de Mathématiques
Université de Neuchâtel
✉ email : regis.houssou@unine.ch

Exercises