Université de Neuchâtel

unine

Faculté des sciences
économiques

■ www.unine.ch/seco

COURSE DESCRIPTION 2009-2010

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 iterative models – Elementary Markov chains theory - Branching processes –

Evaluation

According curriculum 2009-2010 :
- 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