



OUTILS MATHÉMATIQUES AVANCÉS POUR LES PROBABILITÉS ET L'APPRENTISSAGE PROBABILITY THEORY AND INTRODUCTION TO RANDOM PROCESSES

Lecturers: Elisabeth MIRONESCU, Philippe MICHEL

| Lecturers : 18.0 | TC : 14 | PW : 0.0 | Autonomy : 12 | Study : 4 | Project : 0.0 | Language : FR

Objectives

Advanced mathematics for mathematical engineering with a focus on measure theory, probability theory. This course is a pre-requisit for stochastic processes, machine learning, mathematical finance or biomathematics. The remaining of the course concerns the bases of functional analysis and a glimpse of partial differential equations.

Keywords : measure theory, integrals, topology, functional analysis, probability theory, partial differential equations

Programme

- 1) Measure theory, integrals, probability theory
- 2) Topology, functional analysis, introduction to partial differential equations

Learning outcomes

- understanding and proof mastering of analysis and probability
- using an appropriate theoretical framework when dealing with complex problems
- giving examples and counter-examples to illustrate theoretical mathematical notions

Independent study

Objectifs : proving and writing proofs

Méthodes :

Core texts

N. Imniov, V. Girardin, *PROBABILITÉS EN VUE DES APPLICATIONS*, Vuibert, 2008
H. Brézis *ANALYSE FONCTIONNELLE*, Dunod, 2020
P. Billingsley *PROBABILITY AND MEASURE*, Wiley, 1995

Assessment

Final mark = 75% Knowledge + 25% Know-how
Knowledge mark = 100% final exam
Know-how mark = 100% continuous assessment