MATH2372 Stochastic processes

[30h] 3 credits

This course is taught in the 1st semester

Teacher(s):	Jean-François Mertens
Language:	French
Level:	Second cycle

Aims

Introduction to stochastic processes and their applications in probability theory, spectral theory and physics

Main themes

The study of Markov processes bring to the notions of transition probabilities, of semi-groups of operators, of resolvants and generators. For diffusions (strong continuous Markov processes) these generators are elliptic differential operators (like Laplacian), while the transition probabilities are solutions of equations with partial derivatives of a parabolic type (like the heat equation). The integrals of Feynman-Kac bring more probabilistic solutions to families of parabolic equations, while the applications to probabilities, to spectral theory and to mechanics are numerous.

Other information (prerequisite, evaluation (assessment methods), course materials recommended readings, ...)

Prerequisites: basics in theory of measure and probability.
References: Ito´s Notes: Stochastic processes.

Other credits in programs

MATH22/E	Deuxième licence en sciences mathématiques (Economie mathématique)	(3 credits)	
MATH22/G	Deuxième licence en sciences mathématiques	(3 credits)	
STAT3DA/M	Diplôme d'études approfondies en statistique (méthodologie de la statistique)	(3 credits)	Mandatory