UCL Faculté des sciences appliquées

FSA

INMA2470 DISCRETE STOCHASTIC MODELS

[30h+22.5h exercises] 5 credits

This course is taught in the 1st semester

Teacher(s):	Philippe Chevalier
Language:	french
Level:	2nd cycle course

Aims

Introduction to stochastic processes used for modeling random systems and their most common applications. In particular we study methods to compute the operating characteristics of such processes.

Main themes

Introduction to stochastic models in operations research. Study of renewal processes, Markov chains, Markov Processes, Markov Decision Processes. Applications to inventory models, queuing models, branching processes, random walks, etc.

Content and teaching methods

- Introduction to stochastic processes with a discrete state-space
- Discrete time Markov chains with finite and infinite state-space
- Continuous time Markov processes (and semi-Markov processes)
- Renewal processes and stopping rules
- Poisson processes, birth and death processes
- Queuing theory and queuing networks
- Various applications such as inventory models, maintenance models, reliability, job-shops, #

Other credits in programs

ECGE3DS/SC	Diplôme d'études spécialisées en économie et gestion (Master in business administration) (Supply Chain Management)	(5 credits)	
INFO23	Troisième année du programme conduisant au grade d'ingénieur civil informaticien	(5 credits)	
MAP22	Deuxième année du programme conduisant au grade d'ingénieur civil en mathématiques appliquées	(5 credits)	Mandatory
MAP23	Troisième année du programme conduisant au grade d'ingénieur civil en mathématiques appliquées	(5 credits)	
MATH22/G	Deuxième licence en sciences mathématiques	(4 credits)	
MATH22/S	Deuxième licence en sciences mathématiques (Statistique)	(4 credits)	
STAT2MS	Master en statistique, orientation générale, à finalité spécialisée	(8 credits)	