

- Faculté des sciences économiques
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## Probability and stochastic processes (5ST2006)

Filières concernées	Nombre d'heures	Validation	Crédits ECTS
<b>Master en finance</b>	<b>Cours: 2 ph TP: 2 ph</b>	<b>cont. continu</b>	6
<b>Master en méthodologie d'enquête et d'opinion publique (avant 2015)</b>	<b>Cours: 2 ph TP: 2 ph</b>	<b>cont. continu</b>	6
<b>Master en statistique (avant 2015)</b>	<b>Cours: 2 ph TP: 2 ph</b>	<b>cont. continu</b>	6

ph=période hebdomadaire, pg=période globale, j=jour, dj=demi-jour, h=heure, min=minute

### Période d'enseignement:

- Semestre Automne

### Equipe enseignante:

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### Objectifs:

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

### Contenu:

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

### Forme de l'évaluation:

ES : 2-hour written test during the last week of the semester (70% of the grade) and exercises (30 % of the grade).

Reexamination session (August-September) : 2h written test

### Pré-requis:

Calculus

### Forme de l'enseignement:

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