Decision under uncertainty and decision models

ECTS : 3

Volume horaire : 15

Description du contenu de l'enseignement :

Most economic decisions are taken in an uncertain environment, in which the consequences of decisions are not known with certainty, such as investment or insurance decisions. This course aims to introduce the fundamental concepts of decision theory in an uncertain environment, as well as classical resolution models.

Compétence à acquérir :

- Introduction : concepts of uncertainty, risk, and preference.
- EU and SEU models and attitudes towards risk.
- Descriptive limits of EU and extensions RDU, CEU, WEU, and SSB.
- Sequential decision making, graphical models (in particular MDPs), Bellman optimality principle, consequentialist and resolute choice approaches.
- An introduction to bandit algorithms and reinforcement learning.
- Classic decision criteria for decision making under uncertainty (Wald, Hurwicz, Laplace, …), and possibilistic decision making.
- An introduction to elicitation and learning procedures to unveil the decision model of a decision maker.

Mode de contrôle des connaissances :

A 2-hour written exam.

Bibliographie, lectures recommandées :

- von Neumann, John and Oskar Morgenstern,Theory of Games and Economic Behaviour, Princeton University Press, 1947.
- Savage, Leonard J., The Foundations of Statistics, Dover, 1954.
- Puppe, C., Distorted probabilities and choice under risk (Vol. 363). Springer Science & Business Media, 1991.
- Barbera, S., Hammond, P.J., & Seidl, C. Editors, Handbook of Utility Theory: Volume 1: Principles. Springer Science & Business Media, 1998.
- Barbera, S., Hammond, P.J., & Seidl, C. Editors, Handbook of Utility Theory: Volume 2: Extensions. Springer Science & Business Media, 1998.
- Gilboa, Itzhak, Theory of decision under Uncertainty, Cambridge University Press, 2009.

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Université Paris Dauphine - PSL - Place du Maréchal de Lattre de Tassigny - 75775 PARIS Cedex 16