- Faculté des sciences économiques
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Game Theory (5ER1020)

Filières concernées	Nombre d'heures	Validation	Crédits ECTS
Bachelor en sciences économiques, orientation économie	**Cours: 4 ph**	**Voir ci-dessous**	6
Bachelor en sciences économiques, orientation management	**Cours: 4 ph**	**Voir ci-dessous**	6
Bachelor of Science en économie et sport	**Cours: 4 ph**	**Voir ci-dessous**	6
Pilier principal B A - économie	**Cours: 4 ph**	**Voir ci-dessous**	6

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

Période d'enseignement:

- Semestre Printemps

Equipe enseignante

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Contenu

This course offers a systematic way of analyzing strategic decision-making in interactive situations (games) arising in economics and business. It introduces the conceptual frame-work and analytical tools for solving these games. The main objective is to develop and enhance the student's ability to think strategically in complex situations. The students will learn various aspects of strategic interactions through multiple examples and applications. They will also see many strategic situations where game theory can be applied and will learn how the theory can help resolve these situations.

Focusing on non-cooperative game theory, the course applies standard techniques such as domination of strategies, Nash Equilibrium and backward induction across a wide variety of static and dynamic games. The course includes common applications of game theory such as cooperation and bargaining.

The covered topics include:
- Strategic reasoning
- Games with sequential moves
- Games with discrete and continuous strategies
- Games with mixed strategies
- Information games and uncertainty
- Repeated games
- Collective-action games
- Contracts and cooperation
- Evolutionary games

Forme de l'évaluation

Final grade is based on a 2-hour written exam during the exam session at the end of the semester. Participation in class discussions and assignments are rewarded by a bonus added to the final grade.

Retake: 2-hour written exam during the exam session, with no bonus.

In the case of an online exam session, the exam will be a 1-hour written exam via Moodle platform, together with a video-conference connection.

All exams will be closed book with no access to any documents. With the exception of a simple calculator no documents or connected objects are allowed during the exams. Any violation of these rules will be considered as fraud, leading to the withdrawal of unauthorized items and possibly exam failure.

Plagiarism in any form and quantity (in an exam or in an assignment) will cause failure with grade 1 out of 6.

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Documentation

Main textbooks:
- Games of Strategy, 5th ed., Dixit, A., Skeath. S. & McAdams, D. 2020.
- Games, Strategies and Decision Making, 2nd ed., Harrington Jr., J. E. 2014.
Other references:
- Strategy: An Introduction to Game Theory, 3rd ed., Watson, J., 2013.
- Games of Strategy, 3rd ed., Dixit, A., Skeath. S. & Reiley, D.H. 2010.
- Game Theory: An Applied Introduction, Ferreira, J. L., 2020.

Pré-requis

Basic Microeconomics (Microéconomie 2)

Forme de l'enseignement

Lectures: 4 hours per week
Office hours: upon request by e-mail

Objectifs d'apprentissage

Au terme de la formation l'étudiant-e doit être capable de :

- Analyse different games and use a variety of tools to find equilibria
- Apply models of bargaining and negotiation
- Identify different types of games and their uses in strategic thinking
- Recognise strands of game theory and its main concepts
- Predict outcomes of various strategic interactions
- Judge the importance of information in games
- Justify game theory in an evolutionary perspective
- Formulate real-world contexts using game theory concepts

Compétences transférables

- Assimilate logical reasoning
- Develop mathematical rigor
- Solve quantitative problems
- Conceptualise decision contexts and its determinants