Game theory

Course title – Intitulé du cours	Game theory
Level / Semester – Niveau /semestre	Master 2, ETE
School – Composante	Ecole d'Economie de Toulouse
Teacher – Enseignant responsable	Jérôme Renault , Takuro Yamashita
Other teacher(s) – Autre(s) enseignant(s)	
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Lecture Hours – Volume Horaire CM	30
TA Hours – Volume horaire TD	15
TP Hours – Volume horaire TP	
Course Language – Langue du cours	English
TA and/or TP Language – Langue des TD et/ou TP	English

Teaching staff contacts:

- Jérôme Renault : office T 589, jerome.renault@tse-fr.eu, https://sites.google.com/site/jrenaultsite/
- Takuro Yamashita: office T 590, takuro.yamashita@tse-fr.eu
- Teaching assistant(s): Javier González Morín

Course Objectives:

Learning how to deal with strategic interactions.

Fundamentals of Game Theory, with a formal presentation.

Prerequisites :

- Nothing compulsory. Some knowledge of game theory, basic mathematical analysis and probability will help.

Practical information about the sessions:

Laptops/tablets are allowed if they are used for taking notes. Students' active participation is expected. Unjustified late arrival/absence may be penalized.

Grading system :

Midterm exam and Final exam.

Homework may be assigned.

Bibliography/references :

- **Lecture notes available at: https://sites.google.com/site/jrenaultsite/lecturenotes**
- A Course in Game Theory: M.J. Osborne and A. Rubinstein. MIT Press 1994.
- Game Theory: Analysis of Conflict, R.B. Myerson. Harvard University Press, 1991.
- Game Theory, D. Fudenberg and J.Tirole. MIT Press, 1991.
- Game Theory for Applied Economists, Gibbons. Princeton University Press 1992.
- Game Theory. Maschler, Solan and Zamir, Cambridge UP 2013.
- Repeated Games and Reputation. Mailath and Samuelson, Oxford U Press 2006.
- Mathematical Foundations of Game Theory. Laraki, Renault and Sorin, Springer 2019.

Session planning :

- I Strategic games: dominant strategies, Nash equilibria, mixed strategies, elimination of strictly dominated strategies, rationalizability, value and optimal strategies of zero-sum games.
- II Extensive-form games: model, associated strategic form, perfect information games, behavior strategies, sequential rationality; subgame-perfect, Bayesian-perfect and sequential equilibria.
- III Bayesian games and games with incomplete information.
- IV Correlated equilibrium and communication equilibrium.
- (V Introduction to repeated games. Feasible and individually rational payoffs. Folk Theorems)

Distance learning *:*

Distance learning can be provided when necessary by implementing, for example:

- Interactive virtual classrooms
- Recorded lectures (videos)
- MCQ tests and other online exercises / assignments
- Remote (online) tutorials (classes)
- Chatrooms

For the face-to-face mode, the lecture is basically in a classroom, although online materials will be provided if necessary. For the distance learning mode, online materials are provided in advance of the lecture, complemented by interactive Q&A sessions and other materials that ensure the students' understanding