

GAMES THEORY: MARKET BEHAVIOUR

COURSE: THIRD

SEMESTER: FIRST

TYPE: MANDATORY

CREDITS: 3

LANGUAGE: ENGLISH

SENIOR LECTURER: [JORDI ROSELL](#)

OBJECTIVES:

Companies (managers, individuals) often make decisions that affect the well-being of others. In turn, our payoff (compensation, well-being) is often affected by the choices made by others. In simpler terms, people often operate in situations of strategic interaction. Game Theory is the discipline that studies strategic interaction. We will present the concepts required to analyze different forms of strategic interaction.

COMPETENCES:

GENERAL

G1 - Observing with global vision, planning, organizing and managing activities in the enterprise and business world.

G2 - Acting in a proactive way, generating ideas and proposals and implementing initiatives and changes in the heart of the organization, as well as showing willingness to geographic mobility.

G3 - Develop the ability to empathize, adapt, work and lead international and multicultural groups, interdisciplinary, competitive, changing and complex and understand and apply the concept of network.

G5 - Developing a high communicative capacity in English, orally and written.

G6 - Find and explore new information resources and apply quantitative criteria and qualitative aspects in decision making.

BASIC

CB2 – That the students know how to apply their knowledge of work or vocation in a professional way and possess the skills that are usually demonstrated through the elaboration and defense of arguments and problem solving within their area of study.

CB3 – That students have the ability to gather and interpret relevant data (usually within their area of study) to make judgments that include a reflection on erratic social, scientific or ethical issues.

CB4 - Capacity of transmitting information, ideas, problems and solutions to a specialized or not specialized public.

TRANSVERSAL

T1 – To act with a critical spirit and reflection before the knowledge in all its dimensions, showing intellectual, cultural and scientific restlessness and commitment to the rigor and quality in the professional requirement.

T2 – To project the values of entrepreneurship and innovation in the exercise of the academic and professional personal trajectory, through the contact with different realities of the practice and with motivation towards the professional development.

T3 - Interacting in global and international contexts to identify necessities and new realities that allow the transfer of knowledge to actual or emergent professional development context, with capacity to adapt and self-manage professional and investigational processes.

T7 - Getting to be the principal actor of the formative process itself in views of personal and professional improvement, as well as acquisition of integral formation allowing them to learn and coexist in a context of language diversity, with social, cultural and economic different realities.

SPECIFIC

E1 - Analyzing an international business organization based on the economic principles that allow the identification of the key factors in the results.

E3 – Understand the main legal implications of business activity, especially in relation to the processes of businesses internationalization and understand and use the main legal schemes that regulate trade relations worldwide.

E4 - Knowing the principal sources of economic statistic and business information, national and internationally; analyzing and using it in decision-making processes in international business.

E5 - Knowledge of the cultural, social, geopolitical and legislative context of different economies in the world as the foundations to international business development.

E8 – Identify the economic, cultural, political, legal, demographic and technological environments that can represent opportunities and threats for the development of the activity in international business.

E11 – Locate, understand and value existing information in the international environment in order to define target markets, according to the type of company and product.

LEARNING OUTCOMES:

R1- Understands and applies the key aspects of the processes of strategic direction.

R2- Performs strategic diagnosis through analytical technique, identifying and evaluating critically external and internal information to organizations.

R3- Analyzes and assesses critical variables which allow for the establishment of a strategy that would lead to the positioning and/or consolidation of the company in the international market

R4- Understands and sets out the implications of decisions and strategies of the company on other actors (stakeholders) or on the environment.

R8- Solves problems and situations of professional performance with innovative and entrepreneurial attitudes.

R10- Exposes and adequately communicated to all kinds of audiences the different ways of doing business in different international markets.

CONTENT:

- I. **Introduction** Fundamental Concepts, Definitions, and Classification of Games. Chapters 1, 2 (Dixit, Skeath & Reiley) and Lecture.
- II. **Simultaneous moves Games** (Pure strategies) Normal form representation, Nash equilibrium, Dominance, Minimax solution concept for Zerosum Games, Rationalizability, Multiple equilibria, No equilibria, Discrete and Continuous strategies, 3-player games. Chapters 4, 5 (Dixit, Skeath & Reiley) and Lecture.
- III. **Games with Sequential moves Game tree representation**, Actions & Strategies, Advantage in moving first or last, Backward Induction. Chapter 3 (Dixit, Skeath & Reiley) and Lecture
- IV. **Simultaneous and Sequential moves Games**. Converting game trees to Normal form, and vice versa. Changing order of moves, Games with both Sequential and Simultaneous moves. Chapter 6 (Dixit, Skeath & Reiley) and Lecture.
- V. **Simultaneous moves games (Mixed strategies)** Mixing to keep the opponent guessing, Mixing in non-Zero-sum games, Expected values & utility, Mixing with 3 strategies. Chapters 7, 8, Appendix of 7 on Probability & Expected Utility (Dixit, Skeath & Reiley) and Lecture.
- VI. **Prisoners' Dilemma, Repeated Games and Collective Action Finite and Infinite repetition, Leadership, Folk Theorem, Application: Price Matching, Collective Action and Inaction**. Chapters 11, 12 (Dixit, Skeath & Reiley) and Lecture.

EVALUATION SYSTEM:

We meet once a week for two hours. There are bi-weekly problem sets, two midterm exams, and a final exam. First exam is 15%, second exam is 15% and, final exam, is 20%. Every activity not deliver is a zero, and there is no possibility to deliver it after deadline. On class participation mark, there is a possibility to include not scheduled exams. Revaluating will consist 70% exam and 30% previous activities mark.

Activities consist: 30% in problem sets and 10% class activities through Kahoot.

After part one, there is an exam of first part (26th October). December (14th) is the second exam, and the last exam is on January (second last lecture day). First exams accounts for 15% each one, while the last one the remaining 20%.

All activities and problem sets will be corrected in class. Exercises after the deadline will not be accepted.

Class participation mark includes activities and/or “surprise exams” that allows the student to check course performance (10%).

Interactive activities on class through Kahoot would be evaluated (10%). Students must bring their cellphones, tablets or laptops in class.

Final mark could be increase due to an excellent student good performance.

In addition, the teacher will take into consideration the evolution, progress, proactivity, effort and development of the continuous evaluation; besides taking into account the assistance and active participation. An outstanding consideration will be given to the contributions made by the students.

Evaluation system	PROPORTION
Class activities	10
Activities	40
Exams	50

METHODOLOGY:

Although this is an introductory course on game theory, it will cover a substantial amount of the methods and topics in the field. To follow the course therefore will require careful and deep understanding of the subtle ideas introduced in class.

It is important to attend to the classes and spend many hours per week in personal study.

BIBLIOGRAPHY:

ESSENTIAL

- Games of Strategy (Fourth Edition). by Avinash K. Dixit (Author), Susan Skeath (Author), David H. Reiley Jr.
- A primer in Game Theory. Robert Gibbons or Un primer curso de teoría de juegos. Robert Gibbons

COMPLEMENTARY

- Game Theory for Applied Economists, Gibbons, R., Princeton University Press, 1992.
- Dixit, A. and B. Nalebuff, The Art of Strategy, WW Norton, 2008.
- LEYTON-BROWN, K., SHOHAM, Y., Essentials of Game Theory: A Concise, Multidisciplinary Introduction, Morgan & Claypool Publishers. 2008.