Syllabus
Game Theory And Market Strategies

March – July 2019

Elective

Cieza, Juan

I.   General Information

Nombre del curso:	Game Theory And Market Strategies				
Prerrequisito:	Microeconomía II	**Código:**	12677
Precedente:	No tiene	**Semestre:**	2019-1
Créditos:	3	**Ciclo:**	-
Horas semanales:	3 horas teóricas	**Modalidad del curso:**	Presencial
Carrera(s)	**Curso electivo:** Economía y Negocios Internacionales	**Coordinador del curso:**	Jubitza Franciskovic jfranciskovic@esan.edu.pe

II.   Summary

This course explores the relationship among the participants in the market place under the scope of Game Theory tools set. In this framework, strategic reasoning will become a way of assessment to understand: i) why firms decide to produce a specific kind of product, ii) how this is priced, iii) if such product is needed to be differentiated from its competitors, iv) what would be the capacity of the plant that is set, v) what would be the quality and information level offered to the consumers, vi) how much research and development must be invested and so on.

All these questions and others more will be addressed considering the impact that firms exert on their competitors when they apply determined actions and how the others could anticipate the effects of such actions. In this sense, the endogenous interaction will constitute the relevant element in such relationship whereby, depending on the specific kind of "battle field" that will be consider in this matter: dynamic actions, repeated struggles, private information, among others, equilibrium is achieved.

III. Course Objectives

The course's aim is to develop in the students the abilities to allow them to execute own strategies and to assess others'. Business context is the main subject to study, whereby the more relevant aspects such as type product, competitors, pricing, research and development, among other will be tackled under Game Theory perspective.

IV. Learning Outcomes

At the end of the course, the students will be able to:

- Assess and design strategies under Game Theory perspective.
- Applying Game Theory modeling
- Analyze the interaction of competitors in an imperfect market and its consequences in the short and long run.
- Incorporate uncertainty and asymmetric information in the market analysis.

V. Methodology

The course will be developed by theoretical classes, using some basic tools of mathematics (calculus) and statistics. We also will solve examples and exercises that will be useful for examinations. Students are strongly recommended to read the material provided by the professor in advance, in order to discuss the topics in class (see VI. Grading)

In addition, students will provide each class short expositions about an article read in advance (research made by the own students) regarding the correspondent topic (from week 5 onwards). Student groups will do a presentation of a Strategy Report that will take place at the end of the term with the purpose to fully apply the theoretical framework developed along the course.

VI. Grading

The grading system is permanent along the term. The final grade will consider a reading, a group presentation and student participation in class – Permanent Evaluation (50%), a midterm exam (25%) and a final exam (25%)

There will be one main control reading (Ariely Dan. Predictably Irrational: The Hidden Forces that Shape our Decisions. Harper Collins, 2010) that will take place immediately after the midterm exam (1 hour). The Strategy Report presentation will consist on an industry analysis using the game theoretical framework. The evaluation of the latter will consider Game Theory rules in the expositions.

The Permanent Evaluation (PE) is a result of the following:

PERMANENT EVALUATION 50%		
Evaluation Type	**Description**	**weight %**
Strategy Report presentation	Students will gather in groups to tailor a Strategy Report for a class presentation.	25%
Class participation: Article exposition	This will start since topic 5 (week 5). Each student will be endowed with 7 points at the beginning but will lose them in 1 point each class, unless he/she presents and discuss his/her own article. Spontaneous participation is rewarded with 1 extra point (max. 3 along the term), otherwise randomly call will apply.	10%
Main Control Reading	Predictably Irrational	15%

The final grade is the result of applying the following formula:

$$\textbf{FG} = (0{,}25 \times MT) + (0{,}50 \times PE) + (0{,}25 \times FE)$$

FG = Final Grade
MT = Midterm Exam
PE = Permanent Evaluation
FE = Final Exam

VII. Scheduled content of the course

WEEK	CONTENTS	ACTIVITIES /ASSESSMENTS
LEARNING UNIT I: GAME THEORY, GAME TYPES AND APPLICATIONS **LEARNING OUTCOMES:** Students will learn to think strategically and to apply game theory reasoning in business contexts as well as in daily life.		
1° *March 21 – 27*	**1.1 Thinking Strategically**: Intro and examples **1.2 Static Games of Complete Information** (beyond prisoners' dilemma): Best response function and equilibrium. **1.3 Mixed Strategies** **1.4 Cournot Model** **Readings:** Dixit, A. K., & Skeath, S. (2015). Capítulo 1 y 2. *Games of Strategy: Fourth International Student Edition*. WW Norton & Company. Dixit, A. K., & Skeath, S. (2015). Capítulo 4 y 5. *Games of Strategy: Fourth International Student Edition*. WW Norton & Company. Dixit, A. K., & Skeath, S. (2015). Capítulo 7. *Games of Strategy: Fourth International Student Edition*. WW Norton & Company. Gibbons, R. (1992). Capítulo 1. En *Game theory for applied economists*. Princeton University Press.	Class discussion.
2° *March 28 – April 3*	**1.5 Extensions of Cournot Models**: **1.5.1.** Free Entry and Cournot Equilibrium **1.5.2.** The efficient number of competitors **1.6 Bertrand Model** **1.6.1.** Product Differentiation **1.6.2.** Capacity Constraints **1.7 Cournot vs Bertrand** **Readings:** Church, Jeffrey and Ware, Roger. Industrial Organization: A Strategic Approach. Mc Graw Hill, 2000. Chapter 8 Belleflamme, P., & Peitz, M. (2015). Capítulo 3. En *Industrial organization: markets and strategies*. Cambridge University Press.	Class discussion.

3° *April 4 - 10*	**1.8 Dynamic Games of Complete Information** **1.8.1.** Representation, Backward induction and Equilibrium **1.8.2.** Applications: i) Stackelberg Model, ii) Two stage games: Bank Runs and Tariff and Imperfect International Competition	Class discussion.
	Readings: Gibbons, R. (1992). Capítulo 2. En *Game theory for applied economists*. Princeton University Press. Dixit, A. K., & Skeath, S. (2015). Capítulo 3. *Games of Strategy: Fourth International Student Edition*. WW Norton & Company. Dixit, A. K., & Skeath, S. (2015). Capítulo 6. *Games of Strategy: Fourth International Student Edition*. WW Norton & Company.	
4° *April 11 – 17*	**1.9 Static Games of Incomplete Information** **1.9.1.** Bayesian Nash Equilibrium **1.9.2.** Applications: Auctions and Cournot Imperfect Competition Model with higher and lower costs	Class discussion.
	Readings: Gibbons, R. (1992). Capítulo 3. En *Game theory for applied economists*. Princeton University Press.	

LEARNING UNIT II: MARKET STRATEGIES IN THE BUSINESS CONTEXT
LEARNING OUTCOMES:
Students will learn all the tools that firms can use in the business context.

5° *April 22 – 27*	**2.1. Product Differentiation** **2.1.1.** Monopolistic Competition **2.1.2.** Horizontal and Vertical differentiation **2.1.3.** Models: Hoteling and Salop **2.1.4.** Strategic Behaviour: Brand proliferation and specification.	Class discussion. **Article exposition by student**
	Readings: Church, J. R., & Ware, R. (2000). Capítulo 11. En *Industrial organization: a strategic approach*. Boston: Irwin McGraw Hill. Tirole, J. (1988). Capítulo 7. En *The theory of industrial organization*. MIT press. Belleflamme, P., & Peitz, M. (2015). Capítulo 5. En *Industrial organization: markets and strategies*. Cambridge University Press.	
6° *April 29 – May 4*	**2.2. Entry Deterrence** **2.2.1.** The role of investment **2.2.2.** Contestable Markets **2.2.3.** Entry Barries	Class discussion. **Article exposition by student**
	Readings: Church, J. R., & Ware, R. (2000). Capítulo 14. En *Industrial organization: a strategic approach*. Boston: Irwin McGraw Hill. Tirole, J. (1988). Capítulo 8. En *The theory of industrial organization*. MIT press.	

7° *May* *6 – 11*	**MID TERM EXAMS OF ELECTIVE COURSES**	
8° *May* *13 – 18*	**MID TERM EXAMS OF COMSULSORY COURSES**	
9° *May* *20 – 25*	**2.3. Pricing Strategies** **2.3.1.** Group pricing and personalized pricing **2.3.2.** Menu pricing **2.3.3.** Intertemporal price discrimination **2.3.4.** Bundling **Readings:** Belleflamme, P., & Peitz, M. (2015). Capítulo 8, 9, 10 y 11. En *Industrial organization: markets and strategies*. Cambridge University Press.	Class discussion. **Article exposition by student**
10° *May* *27 – June 1*	**2.4. Advertising** **2.4.1.** Advertising and related market strategies **2.4.2.** Asymmetric information, price and advertising signals **2.4.3.** Marketing tools for experience goods: warranties and branding. **Readings:** Church, J. R., & Ware, R. (2000). Capítulo 17. En *Industrial organization: a strategic approach*. Boston: Irwin McGraw Hill. Tirole, J. (1988). Capítulo 2. En *The theory of industrial organization*. MIT press. Belleflamme, P., & Peitz, M. (2015). Capítulo 6. En *Industrial organization: markets and strategies*. Cambridge University Press. Belleflamme, P., & Peitz, M. (2015). Capítulo 12 y 13. En *Industrial organization: markets and strategies*. Cambridge University Press.	Class discussion. **Article exposition by student**
11° *June 3 – 8*	**2.5. Research and Development** **2.5.1.** Incentives to innovate **2.5.2.** When innovation affects market structure **2.5.3.** Cooperation and Spillovers **2.5.4.** Protecting innovations **Readings:** Church, J. R., & Ware, R. (2000). Capítulo 18. En *Industrial organization: a strategic approach*. Boston: Irwin McGraw Hill. Belleflamme, P., & Peitz, M. (2015). Capítulo 18 y 19. En *Industrial organization: markets and strategies*. Cambridge University Press.	Class discussion. **Article exposition by student**

12° June 10 – 15	**2.6. Network Economics** **2.6.1.** Market with network goods **2.6.2.** Strategies for network goods	Class discussion. **Article exposition by student**
	Readings: Motta, M. (2004). Capítulo 2. En *Competition policy: theory and practice*. Cambridge University Press. Belleflamme, P., & Peitz, M. (2015). Capítulo 20 y 21. En *Industrial organization: markets and strategies*. Cambridge University Press.	
13° June 17 – 22	**2.7. Auctions** **2.7.1.** The Vickrey auction. **2.7.2.** Four basic auction mechanisms	Class discussion. **Article exposition by student**
	Readings: Campbell, D. E. (2006). *Incentives: motivation and the economics of information*. Cambridge University Press.	
14° June 24 – 29	**2.7.3.** Revenue equivalence. **2.7.4.** Applications	Class discussion. **Strategy Report presentation**
	Readings: Campbell, D. E. (2006). *Incentives: motivation and the economics of information*. Cambridge University Press.	
15° July 1 – 6	**FINAL EXAMS OF ELECTIVE COURSES**	
16° July 8 – 13	**FINAL EXAMS OF COMSULSORY COURSES**	

VIII. References

Textbooks (required readings)

Belleflamme, P., & Peitz, M. (2015). *Industrial organization: markets and strategies*. Cambridge University Press.

Church, J. R., & Ware, R. (2000). *Industrial organization: a strategic approach*. Boston: Irwin McGraw Hill.

Campbell, D. E. (2006). *Incentives: motivation and the economics of information*. Cambridge University Press.

Dixit, A. K., & Skeath, S. (2015). *Games of Strategy: Fourth International Student Edition*. WW Norton & Company.

Gibbons, R. (1992). *Game theory for applied economists*. Princeton University Press.Motta

Motta, M. (2004). *Competition policy: theory and practice*. Cambridge University Press.

Tirole, J. (1988). *The theory of industrial organization*. MIT press.

Complementary readings (optional but recommended)

Arney, C. (2010). Predictably irrational: the hidden forces that shape our decisions. *Mathematics and Computer Education*, *44*(1), 68.

Belleflamme, P., & Peitz, M. (2015). *Industrial organization: markets and strategies*. Cambridge University Press.

Besanko, D., Dranove, D., Shanley, M., & Schaefer, S. (2009). *Economics of strategy*. John Wiley & Sons.

IX. Laboratory

Not Required

X. Professor

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