Content

Course Code	Course Name	Semester	Theory	Practice	Lab	Credit	ECTS
IND 515	Game Theory And Its Applications	1	3	0	0	3	6

Prerequisites	
Admission Requirements	

Language of Instruction	English
Course Type	Elective
Course Level	Masters Degree
Objective	Game Theory is used in this course to study incentives and strategic behavior in practical situations of inter-dependent decision making. The course will develop better understanding of the basic theoretical results in game theory and their proofs. Balanced time to both theory and applications will be spent. There will be such applications on economic models, auction theory and so on. The participants are encouraged to work on their special interests, e.g. business, politics, etc. of course including Game Theory in their assignments. The goals of the course to provide participants with a foundation to: Develop familiarity with basic results in game theory; Develop a familiarity with mathematical tools used in game theory; Understand the assumptions and the limitations of results in game theory, and the questions that result from those; Understand the application topics of game theory; Develop the ability to read papers involving game theory, and understand the technical parts of the papers.
Content	Introduction, Why study Games? A brief history, The assumptions of Game Theory, Classifying Games Static Games of Complete Information: Basic Theory and Nash Equilibrium Static Games of Complete Information: Applications and Mixed Strategies Static Games of Complete Information: Mixed Strategies and Existence of a Nash Equilibrium Dynamic Games of Complete Information: Complete and perfect information and two-stage games of complete but imperfect information Dynamic Games of Complete Information: Repeated games and dynamic games with complete but imperfect information Static Games of Incomplete Information: Bayesian Games and Bayesian Nash Equilibrium Static Games of Incomplete Information: Mixed strategies and an auction Dynamic Games of Incomplete Information: Perfect Bayesian Equilibrium and signaling games Case Study;-Finance, Accounting, Operations Management and Information systems Case Study; Incentive contractions and the Franchise Decision, Cooperative games and business strategy, The practice of bargaining
References	Gibbons, Robert, “Game Theory for Applied Economists”, Princeton University Press, 1992. Osborne, Martin J., and Rubinstein, Ariel, “A Course in Game Theory”, MIT Press, 1994. Chatterjee, K., Samuelson, W. F., “Game Theory and Business Applications”, Kluwer Academic Publishers, 2002. Geçkil, Ilhan Kubilay, and Anderson, Patrick L., “Applied Game Theory and Strategic Behavior”, CRC Press, 2010. Fudenberg, Drew, and Tirole, Jean, “Game Theory”, 5th Edition, MIT Press, 1996.

Theory Topics

Week	Weekly Contents
1	Introduction, Why study Games? A brief history, The assumptions of Game Theory, Classifying Games
2	Static Games of Complete Information: Basic Theory and Nash Equilibrium
3	Static Games of Complete Information: Applications and Mixed Strategies
4	Static Games of Complete Information: Mixed Strategies and Existence of a Nash Equilibrium
5	Dynamic Games of Complete Information: Complete and perfect information and two-stage games of complete but imperfect information
6	Dynamic Games of Complete Information: Repeated games and dynamic games with complete but imperfect information
7	Static Games of Incomplete Information: Bayesian Games and Bayesian Nash Equilibrium

Week	Weekly Contents
8	Static Games of Incomplete Information: Mixed strategies and an auction
9	Dynamic Games of Incomplete Information: Perfect Bayesian Equilibrium and signaling games
10	Case Study;-Finance, Accounting, Operations Management and Information systems
11	Case Study; Incentive contractions and the Franchise Decision, Cooperative games and business strategy, The practice of bargaining
12	
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14	