

School of Business and Management Sciences / Business Administration (English)

2023 - 2024 Academic Year

GAME THEORY

Syllabus

Course Description					
Name	Code	Semester	T+A Hour	Credit	ECTS
GAME THEORY	BUS4113617	Fall Semester	3+0	3	5
Prerequisites Courses					
Recommended Elective Courses					
Language of Instruction	English				
Course Level	First Cycle (Bachelor's Degree)				
Course Type	Elective				
Course Coordinator	Assist.Prof. Esra BAYTÖREN				
Name of Lecturer(s)	Assist.Prof. Esra BAYTÖREN				
Assistant(s)					
Aim	This course aims to introduce students to the practical application of game theory in business applications, by examining various business and management problems, developing game theory models for these problems, and applying solution concepts used in game theory.				
Course Content	This course contains; Key Ideas and Examples, Terminology, Assumptions and Classification of Games, Strategic Games with Pure Strategies, Strategic Games with Mixed Strategies, Zero-Sum Games, Solving the Prisoners' Dilemma: Coordination and Anti-Coordination Games, Solving the Prisoners' Dilemma: Repetitive Games, Dynamic Games with Pure Strategies, Dynamic Games with Mixed Strategies, Combining Strategic and Dynamic Games, Signaling Games, Cooperative Games, Tender Strategy and Auction Design, Bargaining Games.				
Course Learning Outcomes			Teaching Methods	Assessment Methods	
1. Will be able to recognize game theoretical problems.			10, 16, 6, 9	A	
1.1 Describes the usage areas of game theory					
1.2 Explains the assumptions of game theory					
1.3 Explains the classification of games					
2. Will be able to explain the concept of balance in simultaneous games.			10, 16, 6, 9	A	
2.1 Explains the Nash equilibrium					
2.2 Distinguishes between pure and mixed strategies					
2.3 Explains why and when hybrid strategies will be needed					
3. Will be able to describe constant-sum games.			10, 16, 6, 9	A	
3.1 Illustrates real-life situations compatible with zero-sum games					
3.2 Explains the meaning of minmax and maxmin strategies					
3.3 Explains the saddle point of the game					
4. Will be able to explain the purpose of solving the prisoners' dilemma.			10, 16, 6, 9	A	
4.1 Explains the importance of coordination in solving the prisoners' dilemma					
4.2 Defines the role of repetitive games to solve the prisoners' dilemma					
4.3 Explains the meaning of finite and infinite repetition					
5. Will be able to recognize games with sequential movements.			10, 16, 6, 9	A	
5.1 Shows a dynamic game in a tree-form					
5.2 Defines Nash equilibrium in dynamic games					
5.3 Describes backward reasoning technique					
6. Will be able to describe some applications specific to certain strategic situations.			10, 16, 6, 9	A	
6.1 Describes the effects of signaling in a game					
6.2 Defines procurement strategies					
6.3 Describes the Nash collaborative solution in a bargaining game					
Teaching Methods	10: Discussion Method, 16: Question - Answer Technique, 6: Experiential Learning, 9: Lecture Method				
Assessment Methods	A: Traditional Written Exam				
Lecture Schedule					
Sequence	Topics	Preliminary Preparation			
1	Key Ideas and Examples				
2	Terminology, Assumptions and Classification of Games				
3	Strategic Games with Pure Strategies				
4	Strategic Games with Mixed Strategies				
5	Zero-Sum Games				
6	Solving the Prisoners' Dilemma: Coordination and Anti-Coordination Games				
7	Solving the Prisoners' Dilemma: Repetitive Games				
8	Dynamic Games with Pure Strategies				
9	Dynamic Games with Mixed Strategies				
10	Combining Strategic and Dynamic Games				
11	Signaling Games				
12	Cooperative Games				
13	Tender Strategy and Auction Design				
14	Bargaining Games				
Evaluation Methods		Weight(%)			
Midterm Exam		40			
General Exam		60			

Resources

- [1] Game Theory 101: Complete Textbook, William Spaniel, 2011-2013.
- [2] Game Theory An Introduction, Steven Tadelis, Princeton University Press, 2013.
- [3] Applied Game Theory and Strategic Behavior, Geckil and Anderson, CRC Press, 2010.
- [4] Game Theory An Applied Introduction, Jose Luis Ferreira, Red Globe Press, 2020.
- [5] Lecture Notes
- [6] Yeni Bařlayanlar İin Oyun Teorisi, Hakan Karabacak, , 2.baskı, Sekin, 2018.
- [7] Oyun Teorisi, Ensar Yılmaz, 3.Baskı, Literatür, 2016.
- [8] Strateji Oyunları, Hakan Karabacak, Optimist, 2017.
- [9] Oyun Teorisi ve Ortaklaşa Rrekabet, A.M. Brandenburger, B.J.Nalebuff, 2015.
- [10] Stratejik Düşünme, A.K.Dixit ve B.J.Nalebuff, Sabancı Üniversitesi, 2015.