ESOGÜ MATHEMATICS AND COMPUTER SCIENCES DEPARTMENT COURSE INFORMATION FORM

SEMESTER	FALL

COURSE CODE	821617009	COURSE NAME	Game Theory

SEMESTER	WEEKLY COURSE PERIOD			COURSE OF			
	Theory	Practice	Labratory	Credit	ECTS	TYPE	LANGUAGE
7	3	0		3	5	COMPULSORY ( ) ELECTIVE (X)	TURKISH

COURSE CATAGORY

Mathematics	Computer		Social Science
	X		

ASSESSMENT CRITERIA

	Evaluation Type	Quantity	%
MID-TERM	1st Mid-Term	1	40
	2nd Mid-Term		
	Quiz		
	Homework		
	Project		
	Report		
	Others (………)		
FINAL EXAM		1	60

PREREQUIEITE(S)	None
COURSE DESCRIPTION	Matrix games: Definations and basic concepts, 2×2 games, 2×n games, m×2 games, m×n games, diagonal games, symmetric games. Infinite antagonistic games: Equilibrium situations, optimal strategies, conditional compact games, continuous games in unit square, convex games. Games without a partner: Nash theorem. Partnership games: characteristic functions, imputations and dominance, kernel of the game, von Neumann-Morgenstern solutions, Shapley vector. Stage games: behavior strategies, depletion games, stochastic games, repeated games.
COURSE OBJECTIVES	The aim of the course is to endow students with advanced game theoretical tools and provide them to apply these tools .
ADDITIVE OF COURSE TO APPLY PROFESSIONAL EDUATION	Gain the ability of problem solution and analytical thinking.
COURSE OUTCOMES	The student (i) will learn about the basic concepts of game theory. (ii) will learn to how analyze with advanced game theoretical tools. (iii) will aplly these tools the factual cases.
TEXTBOOK	Mehmet Ahlatçıoğlu, Fatma Tiryaki, Oyunlar Teorisi, YTÜ Yayın No: YTÜ.FE.DK-98.0343, İstanbul-1998.
OTHER REFERENCES	Emrah Akyar, Khalik G. Gusemov, Serkan A. Düzee, , Seçkin Yayınevi, 2010 Anatol Rapoport, N-Person Game Theory, Concepts and Applications, Dover Publications, Inc., Mineola, New York, 2001. Chalaralambos D. Aliprantis, Subir K. Chakrabarti, Games and Decision Making, New York, Oxford University Press, Inc., 2000. Peter Morris, Introduction to Game Theory, Springer-Verlag, 1994.

| TOOLS AND EQUIPMENTS REQUIRED | None |

WEEK	TOPICS
	COURSE SYLLABUS
1	Matrix games: Definations and basic concepts
2	Min-max theorem, 2×2 games, 2×n games
3	m×2 games, m×n games
4	Diagonal games, symmetric games, various applications
5	Infinite antagonistic games: Equilibrium situations, optimal strategies
6	Conditional compact games, continuous games in unit square, convex games, various applications
7	Games without a partner: Nash theorem.
8	Midterm
9	Prisoners' dilemma, of the sexes and various applications
10	Kernel of the game, von Neumann-Morgenstern solutions
11	Shapley vector, various applications
12	Stage games, behavior strategies
13	Depletion games, stochastic games, repeated games
14	General reputation
15,16	Final

NO	Preparation for Final Examination	3	2	1
1	The ability to apply knowledges of Mathematics - Computer,	X		
2	To have sufficient theoretical and practical knowledge of Mathematics at international level,		X	
3	The ability of describing, modelling and solving of mathematical problems at Mathematics and related subjects,		X	
4	The skill to solve and design a problem process in accordance with a defined target,	X		
5	Skills to analyze data, interpret and apply to other datum and using these data on computer,		X	
6	The skill to use the modern techniques and computational tools needed for mathematical applications,	X		
7	The skill to make team work within the discipline and interdisciplinary,		X	
8	The ability to improve oneself by following the developments on other modern, scientific and technological subjects as well as Mathematics - Computer,	X		
9	The skill to communicate orally and in written way, in a clear and concise manner by having individual work skills and ability to independently decide and analytical thinking,	X		
10	The skill to have professional and ethical responsibility,		X	
11	The skill to have consciousness for quality issues and scientific research,	X		
12	The skill to be sensitive to environmental issues related with problems and development of living area and consistent in the social relations,		X	
13	Ability to solve problems in the working life faced to find an appropriate algoritms via mathematical modeling and to write computer programs,	X		
14	The skill to developed design of software systems at different complex levels,	X		
15	The credence of necessity of life-long learning and ability to apply the formation long-life learning.		X	
1:None. **2**:Partially contribution. **3**: Completely contribution.				

Instructor(s): Assoc. Prof. Dr. Ömer Ünsal

Signature: **Date:**