

School of Engineering and Natural Sciences / Industrial Engineering (English)

2024 - 2025 Academic Year

INTRODUCTION to GAME THEORY

Syllabus

Course Description					
Name	Code	Semester	T+A Hour	Credit	ECTS
INTRODUCTION to GAME THEORY	IND3115968	Fall Semester	3+0	3	6
Prerequisites Courses	MODELLEME VE OPTİMİZASYONA GİRİŞ				
Recommended Elective Courses					
Language of Instruction	English				
Course Level	First Cycle (Bachelor's Degree)				
Course Type	Elective				
Course Coordinator	Assoc.Prof. Melis Almula KARADAYI				
Name of Lecturer(s)	Assist.Prof. Orhan İlker BAŞARAN				
Assistant(s)					
Aim	This course aims to introduce concepts in Game Theory as a decision making procedure for engineering problems.				
Course Content	This course contains; Games of Strategy ,Maths Review ,Game Representations ,Dominated Strategies,Equilibrium,Mixed Strategies,Equilibrium in Nonmatrix Games - Part 1,Equilibrium in Nonmatrix Games - Part 2,Equilibrium Selection,Subgame Perfection - Part 1,Subgame Perfection - Part 2,Finately Repeated Games,Finately Repeated Games,General Review.				
Course Learning Outcomes			Teaching Methods	Assessment Methods	
Identifies game theory problems.			10, 11, 12, 9	A	
Solves simple game theory problems.			10, 11, 12, 13, 9	A	
Analyzes sequential games.			10, 11, 12, 13, 9	A	
Finds equilibrium in nonmatrix games.			10, 11, 12, 13, 9	A	
Analyzes repeated games.			10, 11, 12, 13, 9	A	
Teaching Methods	10: Discussion Method, 11: Demonstration Method, 12: Problem Solving Method, 13: Case Study Method, 9: Lecture Method				
Assessment Methods	A: Traditional Written Exam				
Lecture Schedule					
Sequence	Topics	Preliminary Preparation			
1	Games of Strategy	Lectures Notes			
2	Maths Review	Lectures Notes			
3	Game Representations	Lectures Notes			
4	Dominated Strategies	Lectures Notes			
5	Equilibrium	Lectures Notes			
6	Mixed Strategies	Lectures Notes			
7	Equilibrium in Nonmatrix Games - Part 1	Lectures Notes			
8	Equilibrium in Nonmatrix Games - Part 2	Lectures Notes			
9	Equilibrium Selection	Lectures Notes			
10	Subgame Perfection - Part 1	Lectures Notes			
11	Subgame Perfection - Part 2	Lectures Notes			
12	Finately Repeated Games	Lectures Notes			
13	Finately Repeated Games	Lectures Notes			
14	General Review	Lectures Notes			
Evaluation Methods		Weight(%)			
Midterm Exam		30			
General Exam		70			

Resources
Jeffrey Carpenter and Andrea Robbett, (2022), Game Theory and Behavior, The MIT Press, Cambridge, Massachusetts ve London, England