Content

Course Code	Course Name	Semester	Theory	Practice	Lab	Credit	ECTS
INF354	Game Theory and Applications in Informatics	5	3	0	0	3	5

Prerequisites	
Admission Requirements	

Language of Instruction	French
Course Type	Elective
Course Level	Bachelor Degree
Objective	1. To find win strategies for game trees 2. Learning zero-sum games 3. Be able to model and solve some real life problems within the framework of game theory 4. Be able to examine non-zero-sum games at basic level
Content	Week 1: Modeling some problems using game trees Week 2: Determination of winning strategies for game trees Week 3: Zero-sum games for 2 players, strategy, gain matrix and modeling Week 4: Minimax principle and instability in minimax strategies Week 5: Features of max and min operators, modeling and solving of different game examples Week 6: Minimax theorem, solution of 2x2 games Week 7: Geometric solution of 2x2 games Week 8: Midterm exam Week 9: Calculation of game value in 2x2 games Week 10: Examination of 2xm games, solution of nxm games Week 11: Linear programming Week 12: Iteration method for the solution of nxm games Week 13: Introduction to non-zero sum games Week 14: Nash equilibrium
References	1. Oyun Teorisi, Prof. Dr. Hüsamettin Bakoğlu, Ege Üniversitesi Basımevi, 1991. 2. Oyun Teorisine Giriş, Doç. Dr. Ayhan Toraman, İ.T.Ü. Rektörlüğü Offset Atölyesi, 1982. 3. Oyun Teorisi ve J. Nash Dengesi, Ali Koyuncu, 2009.

Theory Topics

Week	Weekly Contents
1	Modeling some problems using game trees
2	Determination of winning strategies for game trees
3	Zero-sum games for 2 players, strategy, gain matrix and modeling
4	Minimax principle and instability in minimax strategies
5	Features of max and min operators, modeling and solving of different game examples
6	Minimax theorem, solution of 2x2 games
7	Geometric solution of 2x2 games
8	Midterm exam
9	Calculation of game value in 2x2 games
10	Examination of 2xm games, solution of nxm games

Week	Weekly Contents
11	Linear programming
12	Iteration method for the solution of nxm games
13	Introduction to non-zero sum games
14	Nash equilibrium