

BALIKESİR UNIVERSITY
NECATİBEY FACULTY OF EDUCATION
UNIVERSITY ELECTIVE COURSE PROPOSAL FORM

Department / Program	Department of Mathematics and Science Education / Mathematics Education								
Course Title	Mathematical Games I								
Semester	Fall	X		Spring	X				
Language	Turkish	X		English					
Credits	Theory	2		Application	0		Total	2	
ECTS	3								
Type of Program	Formal Education				Face to face				
Course Objectives	To develop students' analytical thinking, algorithmic problem-solving, mathematical modeling, and strategic decision-making skills through mathematical games.								
Course Content	Mathematical games								
Course Prerequisites	There are no prerequisites for this course.								
Instructor	Prof. Dr. Nazlı YILDIZ İKİKARDEŞ			mail: nyildiz@balikesir.edu.tr					
Course Assistants	-			mail: -					
Course Internship Status	The course has no internship.								
Course Resources	- Elwyn R. Berlekamp, John H. Conway, Richard K. Guy — Winning Ways for Your Mathematical Plays - Erik D. Demaine, Robert A. Hearn — Games, Puzzles, and Computation - Anany Levitin, Maria Levitin — Algorithmic Puzzles								
Course Category	Mathematics and game								
Planned Learning Activities and Methods	Inquiry, Strategy Development, Question-Answer Session, Algorithmic Solution Generation								

Course Evaluation Criteria			Course ECTS Calculation Content			
Semester Studies	Quantity	Contribution (%)	Activity	Quantity	Duration	Total Work Load (Hour)
Mid-terms	1	40	Course Duration	14	2	28
Short Exam			Out of Class Work Duration	14	1	14
Homework			Midterm Exams	1	20	20
Attendance			Final Exam	1	20	20
Practice			Total Work Load: 82			
Project			ECTS Credits : 3			
Final Exam	1	60				

Learning Outcomes It classifies types of mathematical games. It analyzes recursive and combinatorial games. It develops optimal strategies in games. It constructs and interprets mathematical models. It generates algorithmic solutions.

Course Topics			
Week	Topic	Pre-Study	Materials
1	Introduction to Mathematical Games	Preliminary research of the relevant subject	Course resources and presentations
2	Towers of Hanoi	Preliminary research of the relevant subject	Course resources and presentations

3	Solitaire	Preliminary research of the relevant subject	Course resources and presentations
4	Solitaire	Preliminary research of the relevant subject	Course resources and presentations
5	Sudoku	Preliminary research of the relevant subject	Course resources and presentations
6	Topological Knots	Preliminary research of the relevant subject	Course resources and presentations
7	Topological Knots	Preliminary research of the relevant subject	Course resources and presentations
8	Midterm Exam	Preliminary research of the relevant subject	Course resources and presentations
9	Rubik's Cube	Preliminary research of the relevant subject	Course resources and presentations
10	Tangram	Preliminary research of the relevant subject	Course resources and presentations
11	Jenga	Preliminary research of the relevant subject	Course resources and presentations
12	Number Puzzles	Preliminary research of the relevant subject	Course resources and presentations
13	Number Puzzles	Preliminary research of the relevant subject	Course resources and presentations
14	Mangala	Preliminary research of the relevant subject	Course resources and presentations
15	Evaluation	Preliminary research of the relevant subject	Course resources and presentations

Contribution of Learning Outcomes to Program Outcomes

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