

Specification for the book of courses

Study program		Electrical Engineering and Computer Science		
Module		Computing and Informatics		
Type and level of studies		Undergraduate Academic Studies		
The name of the course		Introduction to the Theory of Games		
Lecturer (for lectures)		Vučković V. Vladan		
Lecturer/associate (for exercises)		Vučković V. Vladan, Veljanovski D. Aleksandar		
Lecturer/associate (for OFE)		Vučković V. Vladan, Veljanovski D. Aleksandar		
Number of ECTS		5	Course status (obligatory/elective)	Elective
Prerequisites				
Course objectives		Mastering the basic principles and models of game theory as well as the techniques for their application in modeling and analyzing various strategic and tactical interactions in a complex environment.		
Course outcomes		Students' competence for strategic thinking and analysis, as well as the application of methods of game theory in solving real problems from practice.		
Course outline				
Theoretical teaching		Introduction and general principles: The subject and goal of studying the theory of games. A brief overview of the history of game theory. Basic concepts and definitions of game theory. Terminology. Classification of games. Strategic thinking. The importance and definitions of the rules of the game. Rationality and common knowledge. The notion of equilibrium. Games with simultaneous moves (static games). Games with sequential moves (dynamic games). The concept of domination (forcing). Mixed strategies and unpredictability. Nash's equilibrium. Mixed games. General classes of games and strategies: Cooperative and non-cooperative games. Characteristic games. Strategic use of information. Strategic and tactical moves. Applications of game theory: in informatics, in economics, in political and military sciences. Application in computer logic games. Other applications.		
Practical teaching (exercises, OFE, study and research)		Exercises; Preparation of seminar papers. Modeling and programming of strategic interactions. Business games. Characteristic games: "dilemma of prisoners", coordination game, "battle of the poles", "cowardice" game, "Falcon and Pigeon" game. Analogy of characteristic games with real situations through examples. Interpretation of strategic equilibrium. Software for solving and simulating static and dynamic games. Software and examples of logical games.		
Textbooks/references				
1		Dixit A., and Skeath S., Games of Strategy, 2nd edition, Norton, New York, 2004.		
2		Vladan Vučković, "An Introduction to the Theory and Practice of Advanced Chess Algorithms", Doctoral Dissertation, Faculty of Electronic Engineering in Niš, October 2006.		
3		Vladan Vučković "Advanced chess algorithms and systems", monograph, Endowment Andrejević, Biblioteka Dissertatio, Belgrade 2011, ISSN 0354-7671		
4		www.gametheory.net		
5				
Number of classes of active education per week during semester/trimester/year				
Lectures	Exercises	OFE	Study and research work	Other classes
2	2	1	0	0
Teaching methods		Lectures, computational exercises, laboratory exercises and consultations.		
Grade (maximum number of points 100)				
Pre-exam duties		Points	Final exam	Points
Activity during lectures			Written exam	
Exercises		20	Oral exam	40
Colloquia		30		
Projects		10		