

Study programme(s): Computer Science				
Level: Bachelor Academic Studies				
Course title: Artificial Intelligence				
Lecturer: Miloš M. Radovanović				
Status: obligatory				
ECTS: 7				
Requirements: Data Structures and Algorithms 2, Discrete Structures 1				
Learning objectives Enabling students to master the basic principles of artificial intelligence (AI) techniques, as well as their practical application on illustrative AI problems.				
Learning outcomes <i>Minimum:</i> At the end of the course it is expected from a successful student to be capable of applying basic AI techniques for machine learning, search and reasoning on illustrative examples. <i>Desirable:</i> At the end of the course it is expected from a successful student to demonstrate deep understanding of the principles of AI techniques for machine learning, search and reasoning through analysis, selection, and implementation in illustrative AI problems.				
Syllabus <i>Theoretical instruction</i> AI history and perspectives. Intelligent agents, the action-perception cycle, applications. Notions of machine learning and data mining. Supervised and unsupervised learning techniques. Reinforcement learning. Search, generalization as search, problem-solving through search, adversarial search. Knowledge representation and reasoning, logic, reasoning under uncertainty. <i>Practical instruction</i> Application of AI techniques for machine learning, search and reasoning on illustrative examples. Implementation of solutions of more complex AI problems in an appropriate programming language, aided by external libraries and resources.				
Literature <i>Recommended</i> 1. S. Russell, P. Norvig. Artificial Intelligence: A Modern Approach. 3rd Edition, Pearson, 2009 2. I. H. Witten, E. Frank, M. A. Hall, C. Pal. Data Mining: Practical Machine Learning Tools and Techniques. 4th Edition, Morgan Kaufmann, 2016				
Weekly teaching load				
Lectures: 2	Exercises: 1	Practical Exercises: 2	Student research: 0	Other: 0
Teaching methodology Lectures are held using classical methods involving a projector. Principles and functioning of AI techniques for machine learning, search and reasoning are explained. During exercises, classical teaching methods are used to practice the principles of functioning of AI techniques through illustrative examples. Implementations of AI techniques are presented and tested on the computer. Students' knowledge is checked through solution of practical problems (individual and group) and written tests (elective). At the oral exam the student demonstrates understanding of AI principles and techniques, and methodologies for their application in practical problems.				
Grading method (maximal number of points 100)				
Pre-exam obligations	points	Final exam	points	
practical exercises – individual problems	20	oral examination (obligatory)	20-40	
practical exercises – group problems	40	tests (elective)	0-20	