Study programme(s): Informatics (IM)	
Level: master	
Course title: Artificial intelligence 2 (IA321)	
Lecturer: Miloš M. Radovanović	
Status: obligatory course for study module *Computer Science*	
ECTS: 7	
Requirements: none	

Learning objectives
Enabling students to master the basic principles of functioning of machine learning techniques, as well as their practical application on illustrative artificial intelligence problems.

Learning outcomes
Minimal: Successful students should be able to apply the basic machine learning techniques to an illustrative example of artificial intelligence.
Optimal: Successful students should be able to demonstrate understanding of the principles of machine learning techniques through analysis, selection, and implementation in artificial intelligence problems.

Syllabus
Theoretical instruction
Intelligent agents, the action-perception cycle, applications. Notions of machine learning and data mining. Classification: techniques, performance measures, overfitting. Dimensionality reduction. Clustering. Numeric prediction, neural networks. Association learning. Data transformation. Applications of machine learning techniques.
Practical instruction
Practicing the understanding of the principles of functioning of basic machine learning techniques. Testing various learning algorithms on illustrative examples.

Literature
I. H. Witten, E. Frank, M. A. Hall. *Data Mining: Practical Machine Learning Tools and Techniques*. Morgan Kaufmann Publishers, 2011

Weekly teaching load				Other: 0
Lectures: 2	Exercises: 3	Other forms of teaching: 0	Student research: 0	

Teaching methodology
Lectures are held using classical methods involving a video-beam. Principles of functioning of machine learning techniques are explained. During exercises, classical teaching methods are used to practice the principles of functioning of machine learning techniques through illustrative examples. Implementations of machine learning techniques are presented and tested on the computer. Students' knowledge is checked through a written test, solution of practical problems, and preparation of a seminar paper that is defended at the end of the course.

Grading (maximum number of points 100)			
Pre-exam obligations	**points**	**Final exam**	**points**
Test	20	seminar paper	50
practical problems	30		