

Specification for the book of courses

Study program		Control Systems		
Module		Common		
Type and level of studies		Master studies		
The name of the course		Intelligent Systems		
Lecturer (for lectures)		Milojković T. Marko		
Lecturer/associate (for exercises)		Milovanović B. Miroslav		
Lecturer/associate (for OFE)		Milovanović B. Miroslav, Spasić D. Miodrag, Sibinović D. Vladimir		
Number of ECTS	5	Course status (obligatory/elective)	Obligatory	
Prerequisites				
Course objectives		Introducing students with the principles of intelligent systems and applications of advanced machine learning techniques in the synthesis, analysis and optimization of industrial processes.		
Course outcomes		Mastering the Python programming language. Gaining knowledge in the field of design and development of intelligent systems. Ability to apply various techniques of machine learning for the needs of analyzing and predicting the dynamics of industrial processes.		
Course outline				
Theoretical teaching		Introduction to intelligent agents and intelligent systems. Basics of Industry 4.0. Working with large databases. Advanced machine learning techniques (decision tree, random forest, k nearest neighbors, naive bayes, linear and logistic regression, support vector machine). Application of advanced techniques of machine learning in the analysis, synthesis and optimization of industrial processes. Calculations in the cloud. Introduction to the current problems and possible solutions for the practical implementation and application of intelligent systems.		
Practical teaching (exercises, OFE, study and research)		Python programming language and the programming environment of Pycharm. Application of advanced techniques of machine learning in the analysis, synthesis and optimization of industrial processes. Designing intelligent systems and their application in practice on real analytical problems.		
Textbooks/references				
1	S. Russell, P. Norvig, "Artificial Intelligence: A Modern Approach", Prentice Hall Series in AI, 2009.			
2	G. Luger, "Artificial Intelligence, Structures and strategies for Complex Problem Solving", Addison Wesley, 2009.			
3	M. Lutz, "Learning Python 5ed", O'Reilly, 2009.			
4	T. Rashid, "Make Your Own Neural Network", CreateSpace Independent Publishing Platform, 2016.			
5	H. Geng, "Internet of Things and Data Analytics Handbook", Wiley, 2016.			
Number of classes of active education per week during semester/trimester/year				
Lectures	Exercises	OFE	Study and research work	Other classes
2	1	1		
Teaching methods		Lectures, Practical classes, Laboratory classes, Consultations		
Grade (maximum number of points 100)				
Pre-exam duties		Points	Final exam	Points
Activity during lectures		10	Written exam	40
Exercises		20	Oral exam	30
Colloquia				
Projects				