Specification for the book of courses

Study program	Computing and Informatics		
Module	Software Engineering		
Type and level of studies	Master studies		
The name of the course	Intelligent Systems		
Lecturer (for lectures)	Stoimenov V. Leonid, Stanimirović S. Aleksandar		
Lecturer/associate (for exercises)	Stoimenov V. Leonid, Stanimirović S. Aleksandar		
Lecturer/associate (for OFE)			
Number of ECTS	4	**Course status (obligatory/elective)**	Elective

Prerequisites	
Course objectives	Providing students an insight into advanced artifical intelligence techniques. Presenting actual problems and possible solutions for intelligent systems realization. Theoretical and practical knowledge as well as the importance of computing vision, communication and planning for intelligent systems implementation. Introducing students with inference problems related to unreliabale knowledge sources. Presenting possible applications of intelligent systems in business systems. Using ontologies for solving problems related to semantical information integration.
Course outcomes	By the end of the course, a student will be able to understand actual intelligent systems' implementaiton issues, as well as future research and development trends in the field of artifical inteliggence. A student will be able to succesfully resolve challenges related to choosing and designing parts of intelligent systems. Student will also be capable of recognizing challenges regarding realization of distributed intelligent systems and semantic information integration, and finally implementing some solutions based on ontologies.
Course outline	
Theoretical teaching	Artifical intelligence systems. Complete Turing test. Inference based on unreliabale data: non-monolit inferencing, statistical methods. Bayesian networks: syntax and semantics, precise and approximate infering. Computing vision. Communication: natural language processing. Speach recognition. Natural language recognition. Speach generation. Planning and planning algorythms. Probabilistic inference. Machine learning and algorithms for machine learning. Distributed intelligence and distributed inferring systems. Application of intelligent systems in business. Business intelligence, multi-databases and OLAP. Semantic representation and commonsense knowledge. Ontologies. Examples of ontology based systems (intelligent information integration, Semantic Web).
Practical teaching (exercises, OFE, study and research	Implementation of systems with unreliabale inferring. Algorythms and methods for computing vision. Algorythms and methods for natural language processing. Algoriythms and methods for maschine learning. neural networks implementation. Decision trees and bussiness intelligence. Ontologies and semantics representation. Ontologies standards. Application of intelligent systems with examples. Examples of open source code and libraries for implementation of intelligent systems.
Textbooks/references	
1	S. Russell, P. Norvig: Artificial Intelligence: A Modern Approach, Prentice Hall Series in AI, 2010.
2	L.Stoimenov, A.Milosavljević, Artificial intelligence labwork manual (in serbian), Faculty of Electronic Engineering, Niš, 2004.
3	D.Bojić, D.Velasevic, V.Misic, Expeert systems, solved examples (in serbian), Naucna knjiga, Belgrade, 1996.
4	
5	

Number of classes of active education per week during semester/trimester/year

Lectures	**Exercises**	**OFE**	**Study and research work**	**Other classes**
2	1	0		

Teaching methods	Lectures, laboratory exercises, laboratory sessions, students work on assignments and projects, student seminars.

Grade (maximum number of points 100)

Pre-exam duties	**Points**	**Final exam**	**Points**
Activity during lectures	10	**Written exam**	
Exercises	50	**Oral exam**	40
Colloquia			
Projects			