1.	Course title	**Agent-based systems**
2.	Course code	IIS-I-06
3.	Study program	**Master degree in computer science and engineering** **Study program: Intelligent Information Systems**
4.	Unit offering the course	**FCSE**
5.	Undergraduate/master/PhD	**Master**
6.	Year/semester 1/summer/elective	7. ECTS: **6**
8.	Teacher(s)	dr. Sonja Gievska
9.	Course prerequisites	None
10.	Goals (competences): The aim of the course is to provide the students with the knowledge for analysing and designing systems using the agent-based approach as a concept, abstraction and metaphor that closely resembles with the human view of the real-life problems. After completion of the course the student is expected: - to have a knowledge of the concepts of the agent paradigm and agent structure - to know the potential of using agent-based approach for modelling, simulation and design of systems - to know the techniques for developing agent components related to reasoning, knowledge representation and learning - to demonstrate the skills to select the appropriate methods for analysis, design and implementation of an agent-based system for a selected problem and domain - to demonstrate a capacity for applying the methodologies and technologies of agent-based design in a selected scenario, application domain and context of use	
11.	Course content: Selected topic of this course follows: - Agent structure, components. Agent classifications - Concepts and techniques for analysis of problems suitable for agent-based design approach - Methodologies for developing agent systems - Languages for agent implementation and inter-agent communication - Application domains – web agents, games, simulations, complex and dynamic systems - The logical foundation for designing agent-based systems - The use of game theory for designing between agent communications - Distributed decision making and collaborative problem solving - Coordination, cooperation and competition between agents - Modelling negotiations, auctions, argumentation and decision making - Modelling group behaviour, forming coalitions - Evaluation and validation of agent behaviour	
12.	Teaching methods: Lectures supported by slide presentations, interactive lectures, trainings (using lab equipment and software packages), team work, case studies, invited guests and lectures, individual practical assignments presentations, seminar paper, e-learning (forums, consultations).	
13.	Total available time	6 ECTS x 30 hours = 180 hours
14.	Distribution of the available time	30 + 15 + 135 = 180 hours

15.	Teaching activities	15.1.	Lectures	30 hours
		15.2.	Training (labs, problem solving), seminar and team work	15 hours
16.	Other activities	16.1.	Project work	60 hours
		16.2.	Self study	25 hours
		16.3.	Home work	50 hours

17.	Grading		
	17.1.	Tests	15 points
	17.2.	Seminar work/project (written or oral presentation)	75 points
	17.3.	Active participation	10 points

18.	Grading criteria	to 59 points	5 (five) (F)
		from 60 to 68 points	6 (six) (E)
		from 69 to 76 points	7 (seven) (D)
		from 77 to 84 points	8 (eight) (C)
		from 85 to 92 points	9 (nine) (B)
		from 93 to 100 points	10 (ten) (A)

19.	Final exam prerequisites	Successfully completed activities 15.1 and 15.2
20.	Course language	Macedonian and English
21.	Quality assurance methods	Internal evaluation and student questionnaires

22. Literature

Compulsory

No.	Authors	Title	Publisher	Year
1.	Michael Wooldridge	An Introduction to Multiagent Systems (2nd Edition)	John Wiley & Sons Ltd	2009
2.	Yoav Shoham & Kevin Leyton-Brown	Multiagent Systems: Algoritmic, Game-Theoretica and Logical Foundations	Cambridge University Press	2009

Additional

No.	Authors	Title	Publisher	Year
1.	Selected authors	A selected list of research papers from relevant conferences in journals		
2.				
3.				