1.	Course	*Advanced Intelligent Information Systems*
2.	Code	KNI_E18
3.	Study programme	Computer Science and Engineering PhD study programme
4.	Study programme organized by	FCSE
5.	Cycle	Third – PhD
6.	Academic year / semester winter/summer/elective	7. ECTS credits 7,5
8.	Teacher	Prof. d-r Danco Davcev, Prof. d-r Slobodan Kalajdziski
9.	Prerequisites	None
10.	Course programme goals (competences): The students will be capable to use various techniques for designing advanced intelligent information systems by integrating artificial intelligence into information systems.	
11.	Course syllabus: Intelligent information systems (IIS) are next generation information systems developed as a result of technologies integration from artificial intelligence and databases. IIS enable intelligent user system communication for problem solving, discovery, searching and data and knowledge manipulation. The topics that will be discussed during the course include: knowledge management, knowledge management systems used in companies, working knowledge management systems, intelligent techniques for knowledge discovery, ontology engineering. IIS supporting decision making in various application fields like medicine, health, insurance, education, banking, veterinary, agriculture, finances and many others. Intelligent algorithms for big data processing and searching. Algorithms and analysis methods, interaction and visualization of data in real time. Tools to support decision making for big data sets (structured and unstructured). Data with high growth rate including 3D, biological, finance, social network data, digital content and data arrays. Security and data protection for all types of big data. Advanced big data processing techniques (analysis, questions, visualization). IIS in the cloud. The relationship between the cloud and big data management.	
12.	Teaching methods: Classes supported with slide presentations, interactive teaching, lab equipment and other software packages, teamwork, case studies, invited guest lecturers, presentations of project works, e-learning materials, forums and consultations.	
13.	Total fund of work hours	7,5 EKTC x 30 h = 225 h
14.	Available hours distribution	45+30+150 = 225

15.	Teaching activities	15.1.	Theoretical classes	45 h
		15.2.	Practical classes (labs, exercises), seminars, team work	30 h
16.	Other activities	16.1.	Project tasks	50 h
		16.2.	Self study	50 h
		16.3.	Homework	50 h

17.	17.1.	Tests		40 points
	17.2.	Seminar work/ project (presentation: written and oral)		50 points
	17.3.	Active participation		10 points

Grading

18.	Grading criteria (points/grade)	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.	Conditions for attending the final exam	Successful completion of activities 15.1 and 15.2
20.	Language	Macedonian or English
21.	Quality assessment	Internal evaluation and student pools

22. Literature

22.1. Compulsory

No.	Author	Title	Publisher	Year
1.	Klusch	Intelligent Information Agents	Springer	1999
2.	F. Ohlhorst	Big data Analytics	Wiley	2013
3.	H. Chaouchi	The Internet of Things	Wiley	2010

22.2. Additional

No.	Author	Title	Publisher	Year
1.	Ras, Zbigniew W.; Tsay, Li-Shiang (Eds.)	Advances in Intelligent Information Systems	Springer, Series: Studies in Computational Intelligence, Vol. 265	2010
2.	B.Sosinsky	Cloud Computing Bible	Wiley	2011
3.	B.Frank	Timing the Big Data Tidal Wave	Wiley	2012
4.	P.C.Zikopoulos et al.	Understanding Big Data	McGraw Hill	2012