1.	Course	*Intelligent Software Algorithms*
2.	Code	KNI_E22
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 Ivan Chorbev
9.	Prerequisites	None

10.	Course programme goals (competences): The students will understand and be able to apply their knowledge about intelligent software algorithms.

11.	Course syllabus: During the course the following topics will be discussed: bounded programming, combinatorial optimization, La Grange relaxation, generalized programming, linear programming, convex optimization, dynamic programming, probabilistic modeling, stochastic programming, random numbers algorithms, hidden Markov models, recommending and suggesting, classification, decision making, combining classificators, crawling, indexing, fuzzy logic, data structures, approximate algorithms, big data problems (compression), computing geometry.

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

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.	Roberto Tempo, Giuseppe Calafiore, and Fabrizio Dabbene	Randomized algorithms for analysis and control of uncertain systems	Springer-Verlag	2005
		2.	Dimitri P. Bertsekas	Dynamic Programming and Optimal Control: 3rd edition, Vols. 1 and 2	Athena Scientific	2007
		3.	Haralambos Marmanis, Dmitry Babenko	Algorithms of the Intelligent Web	Manning Publications Co	
	22.2.	Additional				
		No.	Author	Title	Publisher	Year
		1.	Stephen P. Bradley, Arnoldo C. Hax, Thomas L. Magnanti	Applied Mathematical Programming	Addison-Wesley	
		2.				
		3.				