

1.	Course	<i>Knowledge discovery in data</i>		
2.	Code	KNI_E6		
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 Slobodan Kalajdziski, Prof. d-r Sonja Gievska		
9.	Prerequisites	None		
10.	Course programme goals (competences): Enabling the students to understand the technologies to discover and extract knowledge from data. The student will be capable to design and develop algorithms for information extraction from enormous amount of data.			
11.	Course syllabus: The goal of the course is to research and apply technologies for knowledge discovery, including data mining, text and web mining, machine learning, decision making support, knowledge management and other information technologies that support the collection, management, modeling and using knowledge and data. Special attention will be given to: data preprocessing, generating training and testing sets techniques, classification (training decision trees, nearest neighbour, naive Baes classification, neural networks, etc.), clustering algorithms, graph mining, result validation and their presentation.			
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
		1.	I.H. Witten and E. Frank	Data Mining: Practical Machine Learning Tools and Techniques, Second Edition	Morgan Kaufmann Series in Data Mangmnt Systems
		2.	R. Feldman and J. Sanger	The Text Mining Handbook: Advanced Approaches in Analyzing Unstructured Data	Cambridge University Press
	3.	B. Liu	Web Data Mining: Exploring Hyperlinks, Contents, and Usage Data, 2nd edition	Springer	
	22.2.	Additional			
		No.	Author	Title	Publisher
		1.	J.Y. Chen and Stefano Lonardi	Biological Data Mining, Data Mining and Knowledge Discovery Series	Chapman & Hall/CRC
		2.	W. Abramowicz and J.M. Zurada	Knowledge Discovery for Business Information Systems	The Kluwer International Series
3.	R. Nisbet, J. Elder IV, and G. Miner	Handbook of Statistical Analysis and Data Mining Applications	Academic Press		