1.	Course		*Information Visualization*	
2.	Code		KNI_E1	
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 Suzana Loshkovska	
9.	Prerequisites		none	
10.	Course programme goals (competences): Enabling the students to apply and design visualization techniques on different data types. It is expected that upon completion of the course the student will know, understand, use and develop information visualization techniques.			
11.	Course syllabus: Introduction, definitions. Comparison to scientific visualization. Multidimensional and multivariable data. Visualization of time variable data. Hierarchically organized data and trees. Graph visualization. Network visualization, web and web search results visualization. Software visualization. Text visualization. Visual analysis of data. Frameworks and patterns for information visualization. 2D vs 3D visualization. Non-existent data visualization. Text and graphics integration. Animation, transitions and labelling. User interfaces and interaction with visual views (selection, marking, …). Visualization evaluation. Usability. Using alternative outputs (audio, tactile devices, ...). Privacy and impact on society.			
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.	S. K. Card, J. Mackinlay, B. Shneiderman	Readings in Information Visualization	Academic Press	1999
		2.	R. Spemce	Information Visualization: Design for Interaction	Pearson Education Limited	2007
		3.		selected papers from - IEEE and ACM		
	22.2.	Additional				
		No.	Author	Title	Publisher	Year
		1.				
		2.				
		3.				