1.	Course title	Web Search Engines		
2.	Course code	SBP-I-06		
3.	Study program	**MSC programme – Content based searching**		
4.	Unit offering the course	**FCSE**		
5.	Undergraduate/master/PhD	**Master**		
6.	Year/semester 1/winter/elective	7. ECTS: **6**		
8.	Teacher(s)	Igor Trajkovski		
9.	Course prerequisites	None		
10.	Goals (competences): Web search engines are the main tools for finding information trough the billions of pages on the web. Algorithms, architecture and implementation of these services is particularly interesting, because of the massive amount of processed data and number of users that use web search engines. With this course students will gain knowledge of how web search engines work trough the introduction of the algorithms, architecture and different implementations of several search systems.			
11.	Course content: Measuring and modelling the web, crawling, indexing, classification of web documents, flat and hierarchical clustering, distributed/parallel search engines, PageRank, HITS, Evaluation of search engines, personalization and user interfaces for search engines.			
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	130 + 0 + 50 = 180 hours		
15.	Teaching activities	15.1.	Lectures	130 hours
		15.2.	Training (labs, problem solving), seminar and team work	0 hours
16.	Other activities	16.1.	Project work	15 hours
		16.2.	Self study	15 hours
		16.3.	Home work	20 hours
17.	Grading			
	17.1.	Tests		65 points
	17.2.	Seminar work/project (written or oral presentation)		25 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					
	22.1.	Compulsory				
		No.	Authors	Title	Publisher	Year
		1.	Soumen Chakrabarti	Mining the Web: Discovering Knowledge from Hypertext Data	Morgan Kaufmann	2003
		2.	Bruce Croft, Donald Metzler, Trevor Strohman	Search Engines: Information Retrieval in Practice	Addison Wesley	2009
		3.				
	22.2.	Additional				
		No.	Authors	Title	Publisher	Year
		1.	Ian Witten, A. Moffat, and T. Bell	Managing Gigabytes	Morgan Kaufmann	1999
		2.	C. Manning, P. Raghavan, and H. Schütze	Introduction to Information Retrieval	Cambridge University Press	2008
		3.	Ricardo Baeza-Yates and Barthier Ribeiro-Neto	Modern Information Retrieval	Addison Wesley Longman	2011