1.	Course title	**Modelling and representing unstructured data**		
2.	Course code	SBP-Z-01		
3.	Study program	**Content-based retrieval**		
4.	Unit offering the course	**FCSE**		
5.	Undergraduate/master/PhD	**Master**		
6.	Year/semester 1/winter/compulsory	7. ECTS: **6**		
8.	Teacher(s)	associate professor Slobodan Kalajdziski		
9.	Course prerequisites	None		
10.	Goals (competences): The student will be able to create data models that meet the predefined user requirements and QoS requirements of data retrieval. Special emphasis will be placed on the extraction of knowledge from unstructured data.			
11.	Course content: Design of relevant abstract data types for audio, video, image, spatio-temporal data, bioinformatics data etc., and integration of existing modelling languages using their extensible types mechanisms. Review and compare existing data models and algorithms for efficient storage, retrieval, transfer and display of data. Methods for quantifying the quality of data models. Extracting hidden information from unstructured data. Text mining, Image mining, Audio / video mining. Mechanisms for representation of semantics of user specified requirements and Quality of Service (QoS).			
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.	G. Simsion, G. Witt	Data Modeling Essentials	Morgan Kaufmann; 3rd edition	2004
		2.	S. Hashimoto	Multimedia Modelina (Modeling Multimedia Information and Systems)	World Scientific Publishing Company	2000
		3.	R. Feldman, J. Sanger	The text mining handbook: Advanced approaches in analyzing unstructured data	Cambridge University Press	2007
	22.2.	Additional				
		No.	Authors	Title	Publisher	Year
		1.				
		2.				
		3.				