

1.	Course title	Data Mining		
2.	Course code	CSES622		
3.	Study program	CSE, AIS, ICE		
4.	Unit offering the course	<b>FCSE</b>		
5.	Undergraduate/postgraduate/PhD	<b>Undergraduate</b>		
6.	Year/semester Third/Spring	7. ECTS: <b>6</b>		
8.	Teacher(s)	Lupco Kocarev, PhD, Zaneta Popeska, PhD, Dejan Gorgevik, PhD, Ana Madevska-Bogdanova, PhD, Sonja Gievska, PhD, Andrea Kulakov, PhD, Slobodan Kalajdzieski, PhD, Igor Trajkovski, PhD, Gjorgji Madzarov, PhD.		
9.	Course prerequisites			
10.	Goals (competences): The goal of the course is to introduce the students to basic concepts and modern techniques in the field of data mining. After successfully passing the course the students: will have the inside knowledge about the techniques and algorithms for data mining, as well as the statistical data analysis; will be able to successfully apply the data mining algorithms in solving real problems on large data sets; will be able to conceptualize, analyse, realize, and estimate the performance of a data mining system, and will be introduced to main challenges in the given domain and the domain of research.			
11.	Course content: Introduction to data mining, data pre-processing: data preparation and feature selection, data cleaning, discretisation, integration and transformation, dimensionality reduction. Predictive modelling, prediction and classification. Methodology for Supervised Modeling: K-nearest neighbors algorithm, Bayesian classification, decision trees, association rules, decision rules. Unsupervised Methods: clustering methods and distance measures. Model evaluation techniques. Techniques for data visualization. Review of current topics in the field (text mining, mining biological data, time series mining, analysis of social networks, mining multimedia data).			
12.	Teaching methods: Lectures, in class exercises, laboratory exercises, project assignments, homework assignments, elaboration of software packages for data mining.			
13.	Total available time	6 ECTS x 30 часови = 180 часови		
14.	Distribution of the available time	30+60 +50+40=180		
15.	Teaching activities	15.1.	Lectures	30 hours
		15.2.	Training (labs, problem solving), seminar and team work	60 hours
16.	Other activities	16.1.	Project work and homework	50 hours
		16.2.	Self study	40 hours
17.	Grading			
	17.1.	Tests		70 points
	17.2.	Seminar work/project (written or oral presentation)		20 points
	17.3.	Active participation		10 points

18.	Grading criteria	to 50 points	5 (five) (F)			
		from 51 to 60 points	6 (six) (E)			
		from 61 to 70 points	7 (seven) (D)			
		from 71 to 80 points	8 (eight) (C)			
		from 81 to 90 points	9 (nine) (B)			
19.	Final exam prerequisites	Realized activities 15, 16				
20.	Course language	Macedonian and English				
21.	Quality assurance methods	Internal evaluations and surveys				
22.	Literature					
	22.1.	Compulsory				
		No.	Authors	Title	Publisher	Year
		1.	Jiawei Han, Micheline Kamber and Jian Pei	Data Mining: Concepts and Techniques (Third Edition)	Elsevier Inc.	2012
		2.	Tan, Steinbach, Kumar	Introduction to Data Mining	Addison Wesley	2005
	3.	Ian H. Witten, Eibe Frank, Mark A. Hall	Data Mining: Practical Machine Learning Tools and Techniques	Morgan Kaufmann	2011	
	22.2.	Mandatory				
		No.	Authors	Title	Publisher	Year
		1.	Florin Gorunescu	Data Mining: Concepts, Models and Techniques	Springer	2011
		2.	Daniel T. Larose	Discovering Knowledge in Data: An Introduction to Data Mining	Wiley-Inter science	2004