1.	Course Title	Web search engines
2.	Code	F18L3S080
3.	Study program	Software engineering and information systems
4.	Study Program Organizer	Faculty of Computer Science and Engineering
5.	Degree (first, second, third cycle)	first cycle
6.	Academic year / semester 4 / summer / optional	7. ECTS credits 6
8.	Teacher	associate professor Ivica Dimitrovski, assistant professor Ivan Kitanovski
9.	Course enrollment prerequisites	Обработка на природните јазици

10.	Course program goals (competencies): The goal of the course is to get familiar with concepts for developing web retrieval systems. Understanding ways to process questions and retrieval data sets, as well as ways to automatically gather data from the web. After completing the course, the student is expected to demonstrate knowledge of methods for processing queries, document representation, indexing and classification, to demonstrate knowledge of methods for retrieval and indexing images and to be able to develop retrieval algorithms independently using developer tools.
11.	Course program content: Introduction to web retrieval systems; Query processing; Retrieval using relevance feedback; Vector-space; Document structure; Index creating; Evaluating retrieval systems; Clustering and classification of document; Gathering information from web and social media and indexing it; Personalized retrieval; Algorithms for question answering; Retrieving and indexing images;
12.	Learning methods: Lectures using presentations, interactive lectures, exercises (using equipment and software packages), teamwork, case studies, invited guest lecturers, independent preparation and defense of a project assignment and seminar work.

13.	Total available time		6 ECTS x 30 hours = 180 hours
14.	Distribution of the available time		30 + 45 + 15 + 15 + 75 = 180 hours
15.	Teaching activity forms	15.1.	Lectures – theoretical	30 hours

		teaching	
		15.2. Exercises (laboratory, auditory), seminar papers, teamwork	45 hours
16.	Other activity forms	16.1. Project Tasks	15 hours
		16.2. Independent Learning Tasks	15 hours
		16.3. Home learning	75 hours

17.	Assessment methodology		
	17.1. Tests		0 points
	17.2. Seminar paper/project (presentation: written and oral)		30 points
	17.3. Activity and learning		0 points
	17.4. Final exam		70 points
18.	Assessment criteria (points/grade)	up to 50 points	5 (five) (F)
		51 to 60 points	6 (six) (E)
		61 to 70 points	7 (seven) (D)
		71 to 80 points	8 (eight) (C)
		81 to 90 points	9 (nine) (B)
		91 to 100 points	10 (ten) (A)
19.	Course completion and final exam requirements	Realized activities 15.1 and 15.2	
20.	Teaching Language	Macedonian and English	
21.	Teaching quality evaluation method	Internal evaluation mechanisms and questionnaires	
22.	Course Material		

22.1. Mandatory course material

No.	Author	Title	Publisher	Year
1	Christopher D. Manning, Prabhakar Raghavan and Hinrich Schütze	Introduction to Information Retrieval	Cambridge University Press	2008
2	Stefan Büttcher, Charles L. A. Clarke, Gordon V. Cormack	Information Retrieval: Implementing and Evaluating Search Engines	MIT Press	2016

22.2. Additional course material

No.	Author	Title	Publisher	Year