1.	Course Title	Cloud computing	
2.	Code	F18L3W068	
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 / winter / optional	7. ECTS credits 6	
8.	Teacher	full professor Marjan Gushev, assistant professor Sashko Ristov	
9.	Course enrollment prerequisites	Виртуелизација	
10.	Course program goals (competencies): This course will provide the student with basic knowledge about the concept of cloud computing and cloud services.		
11.	Course program content: (1) Introduction. Definition and evolution. Technologies, services, models. Popular solutions. (1) Advantages, risks, challenges, economic models and SLA. (1) Historical perspective of cloud infrastructure. Data center components. Data center design, requirements, power, efficiency and redundancy. (2) Cloud management, cloud deployment software. Automation techniques and resource orchestration. (1) Building multi-tier cloud applications with reliability and elasticity latency implications. (2) Virtualization and cloud computing. (1) Cloud storage. Concepts. Distributed file systems. (1) Cloud databases. Cloud objects storage. (1) Programming models. Distributed cloud programming. (1) Data parallel analytics with MapReduce, Apache Spark, GraphLab. (1) Cloud environment security. (1) Introduction to fog and dew computing.		
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 teaching	30 hours

		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			10 points
	17.2. Seminar paper/project (presentation: written and oral)			10 points
	17.3. Activity and learning			10 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	Stephen R Smoot, Nam K Tan	Private Cloud Computing: Consolidation, Virtualization, and Service-Oriented Infrastructure	Elsevier	2011
2	Christian Baun, Marcel Kunze, Jens Nimis, Stefan Tai	Cloud Computing Web-Based Dynamic IT Services	Springer	2011
3	George Reese	Cloud Application Architectures	O'Relly	2009
4	Amazon Web Services	Virtual Private Cloud	Amazon	2012

22.2. Additional course material

No.	Author	Title	Publisher	Year