1.	Course Title	Information theory and digital communications	
2.	Code	F18L2S164	
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 2 / summer / optional	7. ECTS credits 6	
8.	Teacher	full professor Verica Bakeva, assistant professor Aleksandra Popovska Mitrovikj	
9.	Course enrollment prerequisites	Веројатност и статистика	
10.	Course program goals (competencies): Students will become familiar with the quantitative information theory and its application in reliable and efficient communication systems. Additionally, they will be introduced in the mathematical model of the communication system.		
11.	Course program content: Stochastic processes: definition, characteristics, stationarity. Entropy and information and their properties. Asymptotic Equipartition Property. Markov chain. Entropy rates of a stochastic processes. Data compression: optimal codes, Huffman codes, Shanon-Fano-Elias coding, arithmetic coding. Communication channel: types of channels, Channel capacity. Linear codes: optimal decoding, Hamming condition. Linear block-code. The Gaussian channel.		
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		0 points
	17.2. Seminar paper/project (presentation: written and oral)		0 points
	17.3. Activity and learning		10 points
	17.4. Final exam		90 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	T.M.Cover	Elements of Information Theory	John Wiley&Sons.Inc.	1991
2	Ž. Pauše	Uvod u teoriju informacije	Školska knjiga, Zagreb	0
3	D.J.C. MacKay	Information Theory, Inference, and Learning Algorithms	Cambridge University Press	2003

	22.2.	Additional course material

No.	Author	Title	Publisher	Year