

1.	Course title	Advanced Coding Theory		
2.	Course code	KK-I-08		
3.	Study program	Coding and cryptography		
4.	Unit offering the course	FCSE		
5.	Undergraduate/master/PhD	Master		
6.	Year/semester 1(2)/winter/elective	7. ECTS: 6		
8.	Teacher(s)	prof. d-r Verica Bakeva prof. d-r Smile Markovski doc. d-r Dejan Spasov		
9.	Course prerequisites	None		
10.	Goals (competences): The aim of the course is generalization of knowledge in coding theory and study of advanced and new aspects for error-detecting and error-correcting codes. Papers with new results from coding theory will be elaborated in this course.			
11.	Course content: - Code Definitions and Code Properties. Shannon theorems. Group codes. - Convolution codes: principles, maximum likelihood decoding, Viterbi decoding, estimation of performances of these codes. - Turbo codes. LDPC codes. Random stream codes. - Error-correcting and error-detecting codes based on quasigroups.			
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	30+30+40+40+40 = 180 hours		
15.	Teaching activities	15.1.	Lectures	30 hours
		15.2.	Training (labs, problem solving), seminar and team work	30 hours
16.	Other activities	16.1.	Project work	40 hours
		16.2.	Self study	40 hours
		16.3.	Home work	40 hours
17.	Grading			
	17.1.	Tests		50 points
	17.2.	Seminar work/project (written or oral presentation)		30 points
	17.3.	Active participation		20 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	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.	Moreira, J.C., Farell, P.G.	Essentials of Error-Control Coding	John Wiley&Sons, Ltd	2006
		2.	Torleiv K.	Codes for error detection	World scientific	2007
		3.	Richardson, T., Urbanke, R.	Modern Coding Theory	Cambridge University Press	2008
	22.2.	Additional				
		No.	Authors	Title	Publisher	Year
		1.	Ling, S., Xing, C.	Coding Theory: A First Course	Cambridge University Press	2004
		2.	Morelos-Zagarozza, R.H.	The art of error-correcting coding	John Wiley&Sons, Ltd	2006
3.						