

1.	Course	<i>Methodology of scientific research in computer sciences and engineering</i>		
2.	Code	KNI_G0		
3.	Study programme	Computer Science and Engineering PhD study programme		
4.	Study programme organized by	FCSE		
5.	Cycle	Third - PhD		
6.	Academic year / semester winter/summer/compulsory	7. ECTS credits 4		
8.	Teacher	Prof. d-r Ljupco Kocarev		
9.	Prerequisites	none		
10.	<p>Course programme goals (competences):</p> <p>The course offers a broad and integrating introduction into the research work practice in computer science with obtained results discussion and analysis. All of the elements of the research process are discussed, special attention is given to the influence of the modern information technologies on the uniting, generating, communication and disseminating of the research results.</p> <p>The course is useful not only for the students of technical sciences background but for all of the students that need to be introduced to the role of computer sciences (including the computational sciences) have on a broader level in mathematics, natural sciences and social sciences as well.</p>			
11.	<p>Course syllabus:</p> <p>Research methods in computer science. Basic research concepts. Computer science paradigms. Proving methods. Quantitative and qualitative data, data analysis and their significance. Computer science and information technologies impact on society and sciences in general. Modern techniques in computer science.</p>			
12.	<p>Teaching methods:</p> <p>Classes supported with slide presentations, interactive teaching, lab equipment and other software packages, teamwork, case studies, invited guest lecturers, presentations of project works, e-learning materials, forums and consultations.</p>			
13.	Total fund of work hours	4 EKTC x 30 h = 120 h		
14.	Available hours distribution	45+30+45 = 120		
15.	Teaching activities	15.1.	Theoretical classes	45 h
		15.2.	Practical classes (labs, exercises), seminars, team work	30 h
16.	Other activities	16.1.	Project tasks	15 h
		16.2.	Self study	15 h
		16.3.	Homework	15 h
17.	Grading			
	17.1.	Tests	40 points	
	17.2.	Seminar work/ project (presentation: written and oral)	50 points	
	17.3.	Active participation	10 points	
18.	Grading criteria (points/grade)	to 59 points		5 (five) (F)

		from 60 to 68 points	6 (six) (E)		
		from 69 to 76 points	7 (seven) (D)		
		from 77 to 84 points	8 (eight) (C)		
		from 85 to 92 points	9 (nine) (B)		
		from 93 to 100 points	10 (ten) (A)		
19.	Conditions for attending the final exam	Successful completion of activities 15.1 and 15.2			
20.	Language	Macedonian or English			
21.	Quality assessment	Internal evaluation and student pools			
Literature					
Compulsory					
	No.	Author	Title	Publisher	Year
22.1.	1.	Turner, Raymond and Eden, Amnon	The Philosophy of Computer Science, The Stanford Encyclopedia of Philosophy (Winter 2011 Edition), Edward N. Zalta (ed.)	1)	2011
	2.	Kuhn, T.S.	The Structure of Scientific Revolutions	Univ. of Chicago Press	1970
	3.	Colburn, T.	Methodology of Computer Science, The Blackwell Guide to the Philosophy of Computing and Information	Malden:Blackwell	2004
Additional					
	No.	Author	Title	Publisher	Year
22.2.	1.	Eden, Amnon,	Three Paradigms in Computer Science	Minds and Machines 17(2): 135–167.	2007
	2.	Denning, P.J.	The Science of Computing: What is computer science?	American Scientist 73(1): 16–19.	1985
	3.				

1) URL = <<http://plato.stanford.edu/archives/win2011/entries/computer-science/>>