1.	Course title	**Algorithms and complexity**			
2.	Course code	CSES419			
3.	Study program	**KNI, ASI**			
4.	Unit offering the course	**FCSE**			
5.	Undergraduate/postgraduate/PhD	**Undergraduate**			
6.	Year/semester 2/summer / elective	7. ECTS: **6**			
8.	Teacher(s)	assoc. prof. dr. Vladimir Trajkovikj, assoc. prof. dr. Dejan Gjorgjevikj, assoc. prof. dr. Marija Mihova, assoc. prof. dr. Slobodan Kalajdziski, assis. prof. dr. Anastas Mishev, assis. prof. dr. Boro Jakimovski, assis. prof. dr. Igor Trajkovski, assis. prof. dr. Ivica Dimitrievski, assis. prof. dr. Gjorgji Madjarov.			
9.	Course prerequisites	Algorithms and data structures			
10.	Goals (competences): The student will attain advanced knowledge about design and analysis of algorithms, considering advanced algorithmic solutions necessary for advanced studying in many areas of information technology.				
11.	Course content: Advanced chapters of algorithm efficiency and complexity. Intractable problems. Advanced search techniques. Advanced algorithms for connected undirected graphs. Advanced algorithms for connected directed graphs. Shortest paths in the graph. Network flows. Other graph algorithms (overlapping, paths, segmentation). Computational Geometry. Iterative algorithms. Backtracking algorithms. Randomized algorithms. Applications. Introduction to programming with constraints.				
12.	Teaching methods: Lectures supported by presentations with slides, interactive lectures, exercises invited guest lecturers, preparation and defence of a project work and seminar thesis, learning in an e-environment (forums, consultations).				
13.	Total available time	6 ECTS x 25 hours = 180 hours			
14.	Distribution of the available time	30 + 60 + 10 + 30+ 30= 150 hours			
15.	Teaching activities	15.1.	Lectures	30 hours	
		15.2.	Training (labs, problem solving), seminar and team work	60 hours	
16.	Other activities	16.1.	Project work	10 hours	
		16.2.	Self study	30 hours	
		16.3.	Home work	30 hours	
17.	Grading				
	17.1.	Tests		65 points	
	17.2.	Seminar work/project (written or oral presentation)		25 points	

	17.3.	Active participation		10 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)
			from 91 to 100 points	10 (ten) (A)
19.	Final exam prerequisites		Completed activities 15 and 16	
20.	Course language		Macedonian and English	
21.	Quality assurance methods		Internal evaluation and satisfaction polls	

22.

Literature

22.1. Compulsory

No.	Authors	Title	Publisher	Year
1.	Steven S. Skiena, Miquel Revilla	Programming Challenges	Springer	2002
2.	Thomas H. Carmen et all	Introduction to algorithms	MIT Press	2009
3.	Jon Cleindberg, Eva Targos	Algorithm design	Pearson Education, Inc	2006

22.2. Mandatory

No.	Authors	Title	Publisher	Year
1.	group of authors	www.topcoder.com		
2.	group of authors	codefu.mk		
3.	group of authors	http://mendo.mk/Welcome.do		