

1.	Course	Advanced Computer Systems (HPC in Cloud)			
2.	Code	INF-S14			
3.	Study programme	Informatics			
4.	Study programme organized by	Faculty of Computer Science and Engineering			
5.	Cycle	Third - PhD			
6.	Academic year / semester winter/summer/elective	first/second	7.	ECTS credits	7.5
8.	Teacher	Prof. D-r Marjan Gusev, Ass. Prof. D-r Sasko Ristov			
9.	Prerequisites	None			
10.	<p>Course programme goals (competences):</p> <p>This course covers the design and implementation of massive and parallel systems, both from machine (hardware) and program (software) sides. More often massive and parallel systems need high performance, scalability and portability, flexible and reusable components, which require modern and appropriate design issues. Cloud computing offers many possibilities for high performance computing. The goal of this course is to qualify a student to be able to solve various problems in design, accesses, patterns, frameworks and methods for practical use.</p>				
11.	<p>Course syllabus:</p> <p>Modern principles of advanced computer architectures. Organization of parallel processing using the latest technology for fast computing. Load balancing. Protocols, functional description and design of modern architectures. High Performance Computing. Concepts and architecture of Cloud, virtualization, processor, memory and storage, elasticity, scalability, resources sharing, advantages and disadvantages of the Cloud concept in terms of high performance techniques for optimal use of resources in Cloud, Cloud performance.</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	7,5 ECTS x 30 h = 225 h			
14.	Available hours distribution	45+30+150 = 225			
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	50 h	
		16.2.	Self study	50 h	
		16.3.	Homework	50 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	

22.	Literature					
	22.1.	Compulsory				
		No.	Author	Title	Publisher	Year
		1.	Christian Baun, Marcel Kunze, Jens Nimis, Stefan Tai	Cloud Computing Web-Based Dynamic IT Services	Springer	2011
		2.	George Reese	Cloud Application Architectures	O'Relly	2009
		3.	Hennessy J., Patterson D.,	Computer Architecture: A Quantitative Approach fifth edition	Elsevier	2012
	22.2.	Additional				
		No.	Author	Title	Publisher	Year
		1.				
		2.				
	3.					