

1.	Course	<b>Advanced Private Cloud Development</b>			
2.	Code	<b>INF-S11</b>			
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.	Course programme goals (competences): This course will qualify a student to plan the development of a private Cloud, along with integration and interoperability in Cloud.				
11.	Course syllabus: Concepts of private Cloud. IaaS and PaaS. Virtualization. Hypervisors, Paravirtualization and full virtualization. Virtualization of processor, memory and input / output devices. Virtualization of the network. Performance analysis of virtualization. Planning and development of open source private cloud. Private Cloud architecture. Scalability and elasticity level at IaaS level. Development of PaaS. Administration of a private Cloud. Federation of private Clouds and creating a hybrid Clouds. Interoperability and portability in Cloud. Security in the private Cloud. Hybrid Clouds.				
12.	Teaching methods: 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				
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				
	Compulsory				
	No.	Author	Title	Publisher	Year
	1.	Stephen R Smoot, Nam K Tan	Private Cloud Computing: Consolidation, Virtualization, and Service-Oriented Infrastructure	Elsevier	2011
22.1.	2.	Paul Barham, Boris Dragovic, Keir Fraser, Steven Hand, Tim Harris, Alex Ho, Rolf Neugebauer, Ian Pratt, Andrew Warfield	Xen and the Art of Virtualization	ACM	2003
	3.				
	Additional				
	No.	Author	Title	Publisher	Year
	1.	Stephen R Smoot, Nam K Tan	Private Cloud Computing: Consolidation, Virtualization, and Service-Oriented Infrastructure	Elsevier	2011
22.2.	2.	Paul Barham, Boris Dragovic, Keir Fraser, Steven Hand, Tim Harris, Alex Ho, Rolf Neugebauer, Ian Pratt, Andrew Warfield	Xen and the Art of Virtualization	ACM	2003
	3.				