

1.	Course title	Advanced interaction technologies		
2.	Course code	SI-I-09		
3.	Study program	Master studies of Computer Science and Engineering - Software Engineering		
4.	Unit offering the course	FCSE		
5.	Undergraduate/master/PhD	Master		
6.	Year/semester 2/summer/elective	7. ECTS: 6		
8.	Teacher(s)	prof. dr. Suzana Loshkovska / assist. prof. dr. Gjorgji Madjarov		
9.	Course prerequisites	None		
10.	Goals (learning outcomes): Upon completion of the course the student is expected to know and understand the devices and techniques for user interaction with the computer, to design a customized interfaces using advanced interactive technologies that include multimodal input and display data, and to design software that uses gesture, speech, touch and computer vision for user interaction computer			
11.	Course content: Introduction. New paradigms of user - computer interaction. Multimodal devices for communication with a computer. Visual interfaces - physiological aspects; devices; eye tracking and gesture recognition. Audio devices - sound for communication, speech recognition. Haptic interfaces, human tactile system, the relation of the human tactile system with human visual and audio systems, active and passive tactile devices, control of haptic interfaces. Haptic devices for people with visual impairments. Interfaces based on movement - monitoring and mapping movements, collision detection, visibility, body movement, locomotion interfaces. Combining of interface approaches for designing effective user interfaces. Modeling and designing user interfaces, and virtual and augmented environments using new interactive technologies.			
12.	Teaching methods:			
13.	Total available time	6 ECTS x 30 hours = 180 hours		
14.	Distribution of the available time	60+0+120 = 180 hours		
15.	Teaching activities	15.1.	Lectures	60 hours
		15.2.	Training (labs, problem solving), seminar and team work	0 hours
16.	Other activities	16.1.	Project work	45 hours
		16.2.	Self study	45 hours
		16.3.	Home work	30 hours
17.	Grading			
	17.1.	Tests		45 points
	17.2.	Seminar work/project (written or oral presentation)		45 points

	17.3.	Active participation			10 points	
18.	Grading criteria		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.	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.	W. Barfield, T. Furness	Virtual Environments and Advanced Interface	Oxford University Press	1995
		2.	M. Jones, G. Marsden	Mobile Interaction Design	John Wiley and Sons	2006
		3.	A. Pirhonen, H. Isomaki, S. Roast and P. Saariluoma (Eds)	Future Interaction Design	Springer-Verlag London Limited	2005
		Additional				
	22.2.	No.	Authors	Title	Publisher	Year
		1.	R. A. Harris	Voise interaction design	Morgan Kaufman	2005
		2.				
3.						