

1.	Course title	Computation in mobile and embedded systems		
2.	Course code	SOCD-I-08		
3.	Study program	System on Chip Design		
4.	Unit offering the course	FCSE		
5.	Undergraduate/master/PhD	Master		
6.	Year/semester 1(2)/summer/elective	7. ECTS: 6		
8.	Teacher(s)	Assist. Prof. Igor Mishkovski		
9.	Course prerequisites	None		
10.	Goals (competences): After successfully completing the course, the student is expected to be able to work with and develop design tools for analysis and implementation of mobile and embedded systems. The student will be able to design and analyse computing elements related to the physical environment.			
11.	Course content: Mobile computations on smartphones and applications. Mobile operating systems and development environments, input modalities, mobile devices user interfaces. Mobile device power management. Mobile device wireless communication, thin clients, mobile Web. Location based services and other context aware services. Virtualization. Dynamic systems. Hybrid systems. Interaction models: asynchron model, synchron modelling languages. Time based communication vs event based communication. Interfaces and component based design. Security and stability. Time logic. Analysis techniques. Deductive verification. Symbolic simulation.			
12.	Teaching methods: Lectures supported by slide presentations, interactive lectures, trainings (using lab equipment and software packages), team work, case studies, invited guests and lectures, individual practical assignments presentations, seminar paper, e-learning (forums, consultations).			
13.	Total available time	6 ECTS x 30 hours = 180 hours		
14.	Distribution of the available time	30 + 15 + 135 = 180 hours		
15.	Teaching activities	15.1.	Lectures	30 hours
		15.2.	Training (labs, problem solving), seminar and team work	15 hours
16.	Other activities	16.1.	Project work	60 hours
		16.2.	Self study	25 hours
		16.3.	Home work	50 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)		
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.	G.C. Buttazo	Hard Real-time Computing Systems: Predictable scheduling algorithms and applications	Kluwer Academic Publishers	1997
		2.	Clarke, Grumberg, Peled	Model checking		2007
		3.	Lee and Varaiya	Structure and Interpretation of Signals and Systems		2009
	22.2.	Additional				
		No.	Authors	Title	Publisher	Year
		1.	Lynch	Distributed algorithms		2006
		2.	Cassandras and Lafortune	Introduction to Discrete-Event Systems		2003
		3.	Tabuada	Verification and Control of Hybrid Systems: A symbolic approach		2005
		4.	Ed Burnette	Hello, Android: Introducing Google's Mobile Development Platform	The Pragmatic Bookshelf, Raleigh, NC	2008
		5.	Bill Dudney, Chris Adamson, Marcel Molina	iPhone SDK Development	The Pragmatic Bookshelf, Raleigh, NC	2009
	6.	Jonathan Zdziarski	iPhone SDK Application Development	O'Reilly & Associates, Sebastopol, CA	2009	