

1.	Course title	<b>Mobile and Embedded Systems</b>		
2.	Course code	SOCD-Z-02		
3.	Study program	<b>System on Chip Design</b>		
4.	Unit offering the course	<b>FCSE</b>		
5.	Undergraduate/master/PhD	<b>Master</b>		
6.	Year/semester 1(2)/winter/compulsory	7. ECTS: <b>6</b>		
8.	Teacher(s)	Assoc. Prof. Vladimir Trajkovikj		
9.	Course prerequisites	None		
10.	Goals (competences): After successfully completing the course, the student is expected to understand the specific characteristics of mobile and embedded systems. The student will be able to categorize and describe the different layers of the embedded software architecture, describe the real time operating systems structure and will be capable to design mobile and embedded software.			
11.	Course content: Introduction to mobile and embedded systems. Embedded mobile systems development process. Hardware platforms. Communication interfaces. Real time embedded operating systems concepts. Embedded real time operating systems overview. Image design for a specific destination platform. Embedded systems examples. IP phone. Software radio. Smart cards. RF tags. Linux and RTLinux programming. Navigation systems development. Protocol converters design. Embedded databases. Mobile Java applications. Embedded software development on 8951, AVR and Intel StrongARM platforms. RFID systems. DSP based embedded systems. Trends.			
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		40 points
	17.2.	Seminar work/project (written or oral presentation)		45 points
	17.3.	Active participation		15 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.	Prasad	Embedded Real Time Systems: Concepts, Design Prog Bb	Dreamtech Press	2003
		2.	Jane W. S. Liu	Real-Time Systems	Prentice Hall	2007
		3.	David E. Simon	An Embedded Software Primer	Addison-Wesley Professional	1999
	22.2.	Additional				
		No.	Authors	Title	Publisher	Year
		1.	Juha Korhonen	Introduction to 3G Mobile Communications 2nd ed	Artech House	2003
		2.	Gornakov S.G.	Programming of Mobile Phones on Java 2 Micro Edition	DMK Press,	2004
	3.	Douglas Boling	Programming Microsoft Windows CE .NET, Third Edition	Microsoft Press	2003	