

Specification for the book of courses

Study program		Computing and Informatics		
Module		Computer Systems Security		
Type and level of studies		Master studies		
The name of the course		Algorithms and Architectures of Dedicated Computer Systems		
Lecturer (for lectures)		Milentijević Z. Ivan, Ćirić M. Vladimir		
Lecturer/associate (for exercises)		Vojinović M. Oliver		
Lecturer/associate (for OFE)				
Number of ECTS		4	Course status (obligatory/elective)	Elective
Prerequisites				
Course objectives		The main objective is adoption of hardware design techniques and hardware implementation of DSP algorithms.		
Course outcomes		Student is expected to design and implement DSP algorithms.		
Course outline				
Theoretical teaching		Typical DSP algorithms. Presentation of algorithms. Mapping DSP algorithms into special-purpose hardware. Timing. Folding and unfolding of architectures. Systolic architectures. Compromise techniques and their application in hardware accelerators for digital signals. Power management. Consumption analysis and reduction estimations. Streaming processors. Multimedia data processing.		
Practical teaching (exercises, OFE, study and research)		The design and description of stream processors in Maxeler environment using Java programming language. Dataflow computational model. Dataflow description in Java.		
Textbooks/references				
1	High-Performance Computing Using FPGAs, Vanderbauwhede W., Benkrid K. (Eds.), Springer, 2013.			
2	FPGAs for Software Programmers, Koch D., Hanning F., Ziener D. (Eds.), Springer, 2016.			
3	Dataflow Programming with MaxCompiler, Maxeler Technologies Inc, 2012.			
4	Keshab K. Parhi, "VLSI Digital Signal Processing Systems: Design and Implementation", Wiley, 1999, ISBN 0471241865.			
5				
Number of classes of active education per week during semester/trimester/year				
Lectures	Exercises	OFE	Study and research work	Other classes
2	1	0		
Teaching methods		Lectures, auditive excercises, student project		
Grade (maximum number of points 100)				
Pre-exam duties		Points	Final exam	Points
Activity during lectures		10	Written exam	
Exercises		10	Oral exam	40
Colloquia				
Projects		40		