Specification for the book of courses

Study program	Electrical Engineering and Computer Science		
Module	Common		
Type and level of studies	Doctoral studies		
The name of the course	Reconfigurable Systems		
Lecturer (for lectures)	Đorđević Lj. Goran		
Lecturer/associate (for exercises)			
Lecturer/associate (for OFE)			
Number of ECTS	10	**Course status (obligatory/elective)**	Elective
Prerequisites			
Course objectives	The course objective is to teach students with architectures and design principles of reconfigurable systems and their applications in computing and embedded systems, including: a) fundamentals of reconfigurable system design at low-, middle- and high-level of abstraction; b) practical aspects of reconfigurable computing and implementation constraints; c) typical applications of reconfigurable systems.		
Course outcomes	After successful completion of this course, students are expected to be able to design and implement fully and partially reconfigurable systems of small- to medium complexity on FPGA platforms.		
Course outline			
Theoretical teaching	Introduction to Reconfigurable Systems. Overview of the architecture of modern FPGA circuits. Trends of development. Design flow, methodologies and design tools. Optimization of the HDL code for FPGA synthesis from the aspect of performance, complexity and energy consumption. Mapping RTL structures to FPGA and implementation: scheduling and binding. Coarse-grained reconfigurable systems and multi-FPGA systems. Hybrid architectures: soft-microprocessors, hardware/software co-design. Comparison of FPGA and multicore architectures. Implementation of arithmetic circuits in FPGA. Applications of reconfigurable systems in fields of: bioinformatics, digital signal processing, image processing, cryptography, molecular dynamics, fluid dynamics, and high-reliability systems. Advanced Topics: dynamic reconfigurability, and partial reconfigurability.		
Practical teaching (exercises, OFE, study and research			
Textbooks/references			
1	S. Hauck, A. DeHon, Reconfigurable Computing: The Theory and Practice of FPGA-Based Computation, 2008.		
2	S. Kilts, Advanced FPGA Design, Architecture, Implementation, and Optimization, John Wiley & Sons, Inc., 2007.		
3	Technical papers from major journals and conferences in the field of reconfigurable computing.		
4			
5			

Number of classes of active education per week during semester/trimester/year				
Lectures	**Exercises**	**OFE**	**Study and research work**	**Other classes**
3	0	0	0	0
Teaching methods	Lectures, seminars, assignments, and class discussions. Independent and team work of students in solving research-oriented tasks.			

Grade (maximum number of points 100)			
Pre-exam duties	**Points**	**Final exam**	**Points**
Activity during lectures		**Written exam**	
Exercises		**Oral exam**	50
Colloquia			
Projects	50		