

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		Digital Circuits and Systems Design		
Lecturer (for lectures)		Dimitrijević A. Marko		
Lecturer/associate (for exercises)				
Lecturer/associate (for OFE)				
Number of ECTS		10	Course status (obligatory/elective)	Elective
Prerequisites				
Course objectives		Acquiring and systemizing knowledge about procedures, methods and tools for digital electronic circuits and systems design. Acquiring advanced knowledge of electronic design automation (EDA) tools for submicron CMOS technologies.		
Course outcomes		Acquiring competence for designing digital circuits and systems, including all aspects that follow this process. Students will learn the design and production processes of digital circuits and systems, from the behavioral model of the circuit/system to its actual realization.		
Course outline				
Theoretical teaching		Digital circuits design according to possibilities and limitations: area, consumption, speed, choice of architecture, bus width, protocols. Signal integrity. Different reference voltage levels coupling. Power routing with multiple power levels on the chip. Power density distributions in the integrated circuit. Power management in the circuit. Clock and synchronization. Design for testability. Design for production. Application of IP blocks. Makrocells. Circuit/system prototyping on FPGA.		
Practical teaching (exercises, OFE, study and research)		Design of digital integrated circuits using tools that represents industrial standards for design of integrated circuits - Cadence Digital Design.		
Textbooks/references				
1	V. Litovski, Electronic Circuit Design (in Serbian), Nova Jugoslavija, Vranje, 2000, ISBN 86-7369-015-3.			
2	Weste, N.H.E., Harris, D., CMOS VLSI Design A Circuit and Systems Perspective, Addison-Weslwy, Pearson Education, Inc., 2005, ISBN 0-321-26977-2.			
3	P. Petković, et.al., Laboratory Exercises in Design of electronic circuits and Design of Digital Integrated Circuits (in Serbian), Faculty of Electronic Engineering Niš, February 2010.			
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, student research work		
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		