

Specification for the book of courses

Study program		Electrical Engineering and Computer Science		
Module		Electronics - Electronic Circuits and Embedded Systems		
Type and level of studies		Undergraduate Academic Studies		
The name of the course		Microprocessor Technique		
Lecturer (for lectures)		Đošić M. Sandra		
Lecturer/associate (for exercises)		Jovanović D. Milica		
Lecturer/associate (for OFE)		Stojanović Z. Igor		
Number of ECTS	5	Course status (obligatory/elective)	Elective	
Prerequisites	Microprocessor systems			
Course objectives	The course aims to provide students with a fundamental knowledge of: a) microarchitecture and basic techniques for improving the performance of modern microprocessors; b) the role and significance, structure and basic concepts of operating systems.			
Course outcomes	By the end of the course a student should be able to: a) understand architectures of pipelined and superscalar processors and high performance microprocessor systems; b) adopt the basic knowledge of operating systems; c) develop simple embedded applications under the Linux operating system.			
Course outline				
Theoretical teaching	Pipelined and superscalar microprocessors: pipelined CPU architecture, dynamic flow instruction, registry renaming, branching predictions and speculative execution, instruction level parallelism. Memory system: cache memory and cache consistency in single- and multi-processor systems. Input/output system: system bus and power supply network. Overview of parallel microprocessor architectures. Introduction to operating systems: concept, structure and types. Basic concepts: processes and threads, memory management, input/output management, file system organization.			
Practical teaching (exercises, OFE, study and research)	Practical classes, through ten laboratory exercises, are focused on developing embedded applications in the C / C ++ programming language using Linux.			
Textbooks/references				
1	J. P. Shen, M. H. Lipasti, Modern processor design: Fundamentals of Superscalar Processors, Waveland Press, Inc, July 30, 2013.			
2	J. L. Hennessy, D. A. Patterson, Computer Architecture: A Quantitative Approach, 6th ed., Morgan Kaufmann, December 7, 2017.			
3	Microprocessor techniques, Notes and PowerPoint presentation for all lectures, available online.			
4				
5				
Number of classes of active education per week during semester/trimester/year				
Lectures	Exercises	OFE	Study and research work	Other classes
2	1	1	0	0
Teaching methods	Lectures, exercises, labs, homework, colloquia, consultations.			
Grade (maximum number of points 100)				
Pre-exam duties	Points	Final exam	Points	
Activity during lectures		Written exam	25	
Exercises	30	Oral exam	25	
Colloquia	20			
Projects				