

<b>Study program: Modern computer technologies</b>			
<b>Course title:</b> Microcomputer Systems			
<b>Professor/assistant:</b> Zoran Milivojevic / Milos Kosanovic			
<b>Type of course:</b> compulsory			
<b>ECTS credits:</b> 6			
<b>Pre-requisites:</b> none			
<b>Aims of the course:</b> The study of microprocessor architecture, microcontrollers and peripheral modules.			
<b>Learning outcomes:</b> The students will be able to design simple hardware modules based on MCS-51 family microcontrollers. They will also be able to develop and write programs in assembly language for Intel 8086 processors.			
<b>Syllabus</b> <i>Theoretical part:</i> The history of microprocessors. The architecture of microprocessors. Microcomputers. Classification. The construction characteristics. Application area. Microcomputer operating systems. Microcontrollers. The history of microcontrollers. An overview of modern microcontroller families (Intel, Philips, Amtel). Microcontrollers with improved performances. Embedded systems. Components of the microcontroller systems. Digital integrated circuits. IEEE/ANSI standards for logic circuits representation from TTL and CMOS families. Analysis of some characteristic integrated components (elementary logic circuits, flip flops, registers, counters, decoders, memories, DA and AD converters). The MCS-51 microcontroller family. Pinout diagrams. Signal generator. Resetting. Memory organization and program memory. Time diagrams. External memory. Read and write operations with external memory. Special purpose registers. Ports. Counters and timers. Serial interface. Interrupts. Decreased power consumption regime. <i>Practical part: Exercises.</i> Practical part follows theoretical topics with different examples and practical exercises.			
<b>Literature</b> 1. Milivojevic Z., Mikrokontroleri – Arhitektura 8051, Punta, Nis, 2005. 2. Karakanov, Z., Christensen, K., Embedded Systems Design with 8051 Microcontrollers, Marcel Dekker, New York, 1999.			
<b>Number of active classes</b>			Other forms of teaching:
Lectures: 30	Practical classes: 30	Research work:15	
<b>Teaching methods</b> Combination of interactive approach with practical examples.			
<b>Grading system</b> (maximum 100 points), <b>grading scale</b> from 5 to 10: below 51 points grade 5, grade 6 from 51-60 points, grade 7 from 61-70 points, grade 8 from 71-80 points, grade 9 from 81-90 points, grade 10 from 91-100 points.			
<b>Pre-exam obligations</b>	<b>points</b>	<b>Final exam</b>	<b>points</b>
activity during theoretical lectures	<b>10</b>	written exam	<b>30</b>
practical training	<b>20</b>	oral exam	
colloquium(s)/seminar papers	<b>40</b>		
<b>Sum</b>	<b>70</b>	<b>Sum</b>	<b>30</b>