

Study program:	Electrical and Computer Engineering – Module: Computer Engineering, Mechatronics			
Type and level of studies:	Undergraduate academic studies (first level of studies)			
Course unit:	Microcontroller systems			
Teacher in charge:	Uroš Pešović, teaching assistant Dejan Vujičić			
Language of instruction:	English			
ECTS:	6			
Prerequisites:	-			
Semester:	Summer			
Course unit objective				
<p>The objective of this course is to provide students with basic knowledge in the field of modern microcontroller systems. Modern electronic devices, especially devices that we can call intelligent, are based on one of the many microcontrollers of different families. The application, design and maintenance of such electronic circuits require knowledge of the architecture and operating principles of modern microcontrollers. Rapid expansion and daily development and production of newer and more modern microcontroller devices require continuous education and training. This course draws on knowledge of the basics of computer engineering and programming. The planned objectives for this course are:</p> <ol style="list-style-type: none"> 1. Familiarity with the architecture of microcontroller systems 2. Mastering assembly programming of microcontrollers 3. Programming the microcontroller in a higher programming language, C 4. Designing the periphery of the microcontroller system 				
Learning outcomes of Course unit				
<p>After completing the course, it is expected that each student should be able to:</p> <ol style="list-style-type: none"> 1. Assess what microcontroller and what performance it can use for specific application 2. To be able to write a program, test a program and program a microcontroller with a tested program 3. To be able to design simpler microcontroller systems to connect and process input devices and communicate with other parts of the system 				
Course unit contents				
<i>Theoretical classes</i>				
Architecture of modern microcontroller systems				
General purpose registers, memory, input output ports				
Assembly instruction and program				
Low Power Microcontroller Systems, TI MSP 430fxxx				
Microchip PIC Microcontroller Family, PIC 18F4xxx				
ARM Cortex M0				
<i>Practical classes</i>				
Microchip PIC Development System, MPLab				
ARM Cortex M0 Development System, Cypress				
FET140 Development System, IAR Embedded Workbench				
Literature:				
1.	ARM University program			
2.				
Number of active teaching hours				
Lectures: 2	Practice: 2	Other forms of classes: Mentoring system	Other classes	Independent work: Case study:
Teaching methods:				
consultations, independent individual work				
Examination methods (maximum 100 points)				
Exam prerequisites	No. of points:	Final exam	No. of points:	
Student's activity during lectures	10	oral examination		
Practical classes		written examination	30	
Colloquiums	30			
Seminars/homework	30			
Grading system				
Grade	No. of points:	Description		
10	91-100	Excellent		
9	81-90	Exceptionally good		
8	71-80	Very good		
7	61-70	Good		
6	51-60	Passing		
5	less than 50	Failing		