

Study program: Computer and software engineering, Mechatronics				
Type and level of studies: Undergraduate academic studies				
Course unit: Computer Controlled Systems				
Teacher in charge: Uroš Pešović, Đorđe Damnjanović				
Language of instruction: English				
ECTS: 6				
Prerequisites: -				
Semester: Summer				
<i>Course unit objective:</i> The aim of the course is to provide students with basic knowledge in the field of control systems based on the application of computers and computer components. Introduction to the components of control systems, characteristics of different industrial processes, different methods of process control. Processing of input data from sensors and measuring transducers and generation of output control signals. Perform multiple control task in real-time.				
<i>Learning outcomes of Course unit</i> After completing the course, it is expected that each student should be able to: 1. To recognize system components 2. To select appropriate the control method 3. Analyzes the system under control 4. To be able to independently design a simple, realistic control computer system				
Course unit contents <i>Theoretical classes</i> Computer in control system. Components in a computer control system. Sensors and actuators. A/D and D/A conversion. Open and closed loop control. PID control. Execution of multiple control tasks. Real-time control. <i>Practical teaching</i> A/D conversion; D/A conversion; signal conditioning; implementation and adjustment of control law parameters; real-time control by implementing control algorithms using real-time operating systems.				
Literature 1. Computer Control: An Overview, Bjorn Wittenmark, Karl-Erik Arzen, Karl Johan Astrom, International Federation Of Automatic Control, 2002 2. Mastering The Freertos Real Time Kernel: A Hands-On Tutorial Guide, Richard Barry, Real Time Engineers Ltd. 2016				
Number of active teaching hours				Other classes
Lectures: 3	Practice:1	Other forms of classes:	Independent work:	
Teaching methods: consultations, independent work				
Examination methods (maximum 100 points)				
Exam prerequisites	No. of points:	Final exam	No. of points:	
Student's activity during lectures	10	oral examination	25	
Practical classes	15	written examination	25	
Seminars/homework	35			
Project				
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		