

Study program: Electrical and Computing Engineering – Module: Remote Control				
Type and level of studies: Master studies (second level of studies)				
<b>Course unit: PLC Programming</b>				
<b>Teacher in charge: Miroslav Bjekic</b>				
Language of instruction: English				
ECTS: 6				
Prerequisites: -				
Semester: Summer				
<b>Course unit objective</b>				
Students should acquire skills in programming and implementation of logical programmable controller (PLC) by standard EN 61131				
<b>Learning outcomes of Course unit</b>				
After completion of the course students are qualified to program PLC programs according to EN 61131 and apply it to the specific PLC applications				
<b>Course unit contents</b>				
<i>Theoretical classes</i>				
Introduction to PLC. The structure of the PLC. Types of variables. Programming organizational units (program, function blocks, functions). PLC programming: Ladder diagram, Functional Block Diagram, Structured Text, Instruction List, Sequential function chart, Continuous functional diagram. Debugging programs. Operator panel. Connecting PLCs. Creating projects with PLC. Documenting the project. PLC application.				
<i>Practical classes</i>				
Laboratory classes in which students program PLC and solve practical problems that they may meet in real industrial applications.				
<b>Literature</b>				
1. PLC programming according to the IEC 61131-3 standard				
2. User Manual for PLC Programming with CoDeSys, 3S - Smart Software Solutions GmbH				
<b>Number of active teaching hours</b>				<b>Other classes</b>
Lectures: 2	<i>Practice: 2</i>	<i>Other forms of classes:</i> Mentoring system	<i>Independent work:</i> Case study	
<b>Teaching methods:</b> consultations, practical work in the lab, independent work				
<b>Examination methods ( maximum 100 points)</b>				
<b>Exam prerequisites</b>	<b>No. of points:</b>	<b>Final exam</b>	<b>No. of points:</b>	
Student's activity during lectures	10	oral examination	30	
Practical classes	40	written examination	20	
Seminars/homework		.....		
Project				
<b>Grading system</b>				
<b>Grade</b>	<b>No. of points</b>	<b>Description</b>		
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		