

## Specification for the book of courses

<b>Study program</b>		Electrical Engineering and Computer Science		
<b>Module</b>		Electrical Power Engineering		
<b>Type and level of studies</b>		Undergraduate Academic Studies		
<b>The name of the course</b>		Process Control		
<b>Lecturer (for lectures)</b>		Jovanović D. Zoran, Nikolić S. Saša		
<b>Lecturer/associate (for exercises)</b>		Danković B. Nikola		
<b>Lecturer/associate (for OFE)</b>		Danković B. Nikola		
<b>Number of ECTS</b>	6	<b>Course status (obligatory/elective)</b>	Elective	
<b>Prerequisites</b>				
<b>Course objectives</b>	Gaining knowledge of industrial processes, the classical method of control and computer process control.			
<b>Course outcomes</b>	Knowledge of methods for the synthesis and implementation of control systems of specific industrial processes (mechanical, electromechanical, thermal, hydraulic, chemical, nuclear ...).			
<b>Course outline</b>				
<b>Theoretical teaching</b>	General concepts of processes. Types of processes. Features of the process. Economic aspects of process control. Classical methods of control. Program control. Sequential process control. The application of computer technology in the process control. Real time computer controlled systems. Application of microprocessors and microcomputers. Application of programmable logic controllers. Application of computers in automatization of complex processes. Hierarchical process control. Fuzzy control of processes. Type of controllers. Methods for setting PID controller parameters Application of orthogonal polynomials in the examination of the sensitivity of various systems.			
<b>Practical teaching (exercises, OFE, study and research)</b>	Working with software package MATLAB, and the application of gained knowledge in real industrial processes. Types of processes. Features of the process. Impulse proportional control. Fuzzy control. Development and tuning industrial PID Controllers. Application of genetic algorithms in the management of complex systems. Applications of orthogonal filters in process management. Application of the knowledge gained in the management of the laboratory equipment of the equipment manufacturer Feedback.			
<b>Textbooks/references</b>				
1	B. Danković, D. Antić, Z.Jovanović, Process control (in Serbian), Faculty of Electronic Engineering, Niš, 2010.			
2	G. Kalani, "Industrial Process Control", Elsevier, 2002.			
3	J. Romagnoli, A. Palazoglu, "Introduction to Process Control", CRC Press, 2006.			
4				
5				
<b>Number of classes of active education per week during semester/trimester/year</b>				
<b>Lectures</b>	<b>Exercises</b>	<b>OFE</b>	<b>Study and research work</b>	<b>Other classes</b>
2	1	1	0	0
<b>Teaching methods</b>	Lectures; Laboratory Exercises; Computer Exercises; Consultations			
<b>Grade (maximum number of points 100)</b>				
<b>Pre-exam duties</b>	<b>Points</b>	<b>Final exam</b>		<b>Points</b>
<b>Activity during lectures</b>	10	<b>Written exam</b>		20
<b>Exercises</b>	20	<b>Oral exam</b>		30
<b>Colloquia</b>	20			
<b>Projects</b>				