

Specification for the book of courses

Study program		Electrical Engineering and Computer Science		
Module		Control Systems		
Type and level of studies		Undergraduate Academic Studies		
The name of the course		Process Control		
Lecturer (for lectures)		Jovanović D. Zoran, Nikolić S. Saša		
Lecturer/associate (for exercises)		Danković B. Nikola		
Lecturer/associate (for OFE)		Danković B. Nikola		
Number of ECTS	5	Course status (obligatory/elective)	Obligatory	
Prerequisites				
Course objectives	Gaining knowledge of industrial processes, the classical method of control and computer process control.			
Course outcomes	Knowledge of methods for the synthesis and implementation of control systems of specific industrial processes (mechanical, electromechanical, thermal, hydraulic, chemical, nuclear ...).			
Course outline				
Theoretical teaching	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.			
Practical teaching (exercises, OFE, study and research)	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.			
Textbooks/references				
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				
Number of classes of active education per week during semester/trimester/year				
Lectures	Exercises	OFE	Study and research work	Other classes
2	1	1	0	0
Teaching methods	Lectures; Laboratory Exercises; Computer Exercises; Consultations			
Grade (maximum number of points 100)				
Pre-exam duties	Points	Final exam		Points
Activity during lectures	10	Written exam		20
Exercises	20	Oral exam		30
Colloquia	20			
Projects				