

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		SCADA Systems		
Lecturer (for lectures)		Jovanović D. Zoran, Nikolić S. Saša		
Lecturer/associate (for exercises)		Danković B. Nikola, Nikolić S. Saša		
Lecturer/associate (for OFE)		Danković B. Nikola		
Number of ECTS	5	Course status (obligatory/elective)	Obligatory	
Prerequisites				
Course objectives				
Getting to know the SCADA system and acquiring knowledge about the application of these systems in the control and management of industrial processes and distributed management systems.				
Course outcomes				
Application of SCADA system in solving practical problems in industry and distributed systems. Independent development of application software in SCADA development environment.				
Course outline				
Theoretical teaching				
Introduction to SCADA systems. Definition and elements of the SCADA system. History of the SCADA system. Real time systems. Remote control. Communication with SCADA system. How to connect with SCADA. Control and management using the SCADA system. Application of SCADA system in distributed control systems-systems for water supply, petro-chemistry, electric power systems, district heating systems. SCADA user interface. Economic indicators of SCADA application in industrial plants. Examples.				
Practical teaching (exercises, OFE, study and research work)				
Getting to know and working with HMI software using Citect SCADA. Installing and activating software. Project concept - Citect SCADA (level of use, compilation and start-up, project information). Working with existing projects (backup, restore, add and remove link) Setting up communication with the PLC, choosing a communication protocol, drivers. The concept of the page - Citect SCADA. The concept of tags and types of tags. Objects. Create and edit graphic and control objects (Polygon, Pipe, Text, Number, Button, Symbol Set ...). Programming graphic objects (Fill, Slider, Access, Display Value, Visibility ...). Types and subtypes of alarm. Alarm and alarm settings. Trend system (defining tag trends, creating page trends, setting and tracking). Page and project animation. Definition of clusters. Defining the server. Creating user accounts and defining access and privilege rights. Security of the SCADA system. Cicode editor. Cicode functions. Cicode scripts. Using templates. Examples. SCADA software from other manufacturers (Siemens, Schneider Electric, Omron). Project task.				
Textbooks/references				
1	S. Boyer, "SCADA (Supervisory Control and Data Acquisition)", ISA, 1999			
2	D. Bailey, E. Wright, "Practical SCADA for Industry", Newnes, 2003			
3				
4				
5				
Number of classes of active education per week during semester/trimester/year				
Lectures	Exercises	OFE	Study and research work	Other classes
2	2	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		10	Oral exam	20
Colloquia				
Projects		40		