

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		Sensors, Transducers and Actuators		
Lecturer (for lectures)		Radenković N. Dragan, Dinčić R. Milan		
Lecturer/associate (for exercises)		Pešić T. Miroљjub, Đorđević-Kozarov R. Jelena		
Lecturer/associate (for OFE)		Pešić T. Miroљjub, Đorđević-Kozarov R. Jelena		
Number of ECTS	6	Course status (obligatory/elective)	Elective	
Prerequisites				
Course objectives	Mastering the basic knowledge necessary for the use of sensors for measurement of non-electrical quantities using electrical systems.			
Course outcomes	Theoretical and practical knowledge necessary for the realization of measurement and control systems; Mastering the usage of appropriate sensors and electronic circuits.			
Course outline				
Theoretical teaching	Transducers, calibration, linearization and sensor connection. Classification of sensors. Sensors for measurement of movement, linear and angular motion. Accelerators, forces and torque sensors. Sensors for measuring pressure, level and flow of fluids. Temperature sensors and radiometric thermometers. Sensors of humidity, smoke and other non-electrical quantities. Sensors for measuring angular velocity, pressure in car tires, light and rain sensors. Actuators and their characteristics. Connection of sensors, transducers and actuators. Realization of measurement and control systems based on computers and microcontrollers.			
Practical teaching (exercises, OFE, study and research)	Realization of laboratory exercises and project tasks in order to master the use of sensors and actuators and realization of measurement and control systems.			
Textbooks/references				
1	D. Stanković, "Physical-technical measurements - sensors", University of Belgrade, 1997 (in Serbian).			
2	M. Popović, "Sensors and Measurements", 4.-th edition, 2004, (in Serbian).			
3	John Webster, „The Measurement, Instrumentation and Sensors Handbook“, CRC Press, 2014.			
4	Nawrocki, „Measurement systems and sensors“, Artech House, 2005.			
5				
Number of classes of active education per week during semester/trimester/year				
Lectures	Exercises	OFE	Study and research work	Other classes
2	1	2	0	0
Teaching methods	Lectures; Practice; Laboratory exercises; Project tasks; Consultations			
Grade (maximum number of points 100)				
Pre-exam duties	Points	Final exam	Points	
Activity during lectures	5	Written exam	25	
Exercises	15	Oral exam	25	
Colloquia	30			
Projects	0			