

Specification for the book of courses

Study program		Electrical Engineering and Computer Science		
Module		Common		
Type and level of studies		Doctoral studies		
The name of the course		Process Measurement Technique		
Lecturer (for lectures)		Jovanović R. Jelena		
Lecturer/associate (for exercises)				
Lecturer/associate (for OFE)				
Number of ECTS	10	Course status (obligatory/elective)	Elective	
Prerequisites				
Course objectives	Systematization of knowledge of measurement techniques in process industry and of technical systems.			
Course outcomes	Ability to design instrumentation for measurement, control and monitoring of the technical system.			
Course outline				
Theoretical teaching	Basic principles of measurement systems and measurement techniques in the process industry. Measurement transducers and systems. Mechatronic systems. Measurement of dimensions, linear and angular position. Measurement of force and moment. Measurement of number of rotations and angular speed. Measurement of vibration and impacts. Temperature measurement and thermovision. Measurement of pressure, differential pressure and vacuum. Flow measurement. Level measurement. Measurement of humidity. Measurement-informational systems. Programmable industrial automation systems. The basic principles of the application of the Internet of Things technology in monitoring industrial processes and technical systems.			
Practical teaching (exercises, OFE, study and research)	The basic principles of the application of the Internet of Things technology in monitoring industrial processes and technical systems by using open-source platforms, such as Arduino and Raspberry Pi.			
Textbooks/references				
1	P.H.Sydenham et al., "Measurement Science and Engineering", John Wiley and Sons.			
2	J.Webster, "The measurement, instrumentation, and sensors handbook", IEEE Press, 1999.			
3	C.F.Coombs ed, "Electronic instrument handbook", McGraw-Hill, 2000.			
4				
5				
Number of classes of active education per week during semester/trimester/year				
Lectures	Exercises	OFE	Study and research work	Other classes
3	0	0	0	0
Teaching methods	Lectures and laboratory work within the framework of research work. From certain areas within defined project tasks, the first steps in scientific research are expected, and students are involved in the process of writing and presenting of scientific papers.			
Grade (maximum number of points 100)				
Pre-exam duties	Points	Final exam		Points
Activity during lectures		Written exam		50
Exercises		Oral exam		
Colloquia				
Projects	50			