

## Specification for the book of courses

<b>Study program</b>		Electrical Engineering and Computer Science		
<b>Module</b>		Common		
<b>Type and level of studies</b>		Doctoral studies		
<b>The name of the course</b>		Industrial Measurement and Information Systems		
<b>Lecturer (for lectures)</b>		Denić B. Dragan		
<b>Lecturer/associate (for exercises)</b>				
<b>Lecturer/associate (for OFE)</b>				
<b>Number of ECTS</b>	10	<b>Course status (obligatory/elective)</b>	Elective	
<b>Prerequisites</b>				
The objective of the course is to introduce a student with modern industrial measurement and information systems, with theoretical and practical knowledge required to analyze and design such systems. The objective of the course is also to train students for scientific research in this field.				
<b>Course objectives</b>				
Ability to demonstrate knowledge and understanding of the operating principles of industrial measurement systems based on application of the computer, ability to analyze and select appropriate hardware and software. Ability to design and realize some examples of virtual instruments.				
<b>Course outcomes</b>				
Ability to demonstrate knowledge and understanding of the operating principles of industrial measurement systems based on application of the computer, ability to analyze and select appropriate hardware and software. Ability to design and realize some examples of virtual instruments.				
<b>Course outline</b>				
Basic block diagram of measurement-information system. Definitions. Signal Processing and Signal Transmission. Wired and wireless telemetry. Standards. Design of analog electronic circuits for sensors connection. Methods and systems for improving the signal-to-noise ratio. Computer-based systems and standard communication interfaces. Distributed measurement systems and Internet connectivity. Virtual instrumentation and virtual laboratories.				
<b>Theoretical teaching</b>				
Basic block diagram of measurement-information system. Definitions. Signal Processing and Signal Transmission. Wired and wireless telemetry. Standards. Design of analog electronic circuits for sensors connection. Methods and systems for improving the signal-to-noise ratio. Computer-based systems and standard communication interfaces. Distributed measurement systems and Internet connectivity. Virtual instrumentation and virtual laboratories.				
<b>Practical teaching (exercises, OFE, study and research)</b>				
<b>Textbooks/references</b>				
1	D. Denić, I. Randelović, D. Živanović „Computer-based measurement systems in industry“, Faculty of Electronic Engineering Niš and WUS Austria, script, 2005 (in Serbian).			
2	R. Zurawski, “Industrial information technology handbook”, CRC Press, 2005.			
3	R. Zurawski, “Industrial communication technology handbook”, CRC Press, 2005.			
4	W. Nawrocki, „Measurement systems and sensors“, Artech House, 2005.			
5	S. Sumathi, P.Surekha, “LabVIEW based advanced instrumentation systems”, Springer, 2007.			
<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>
3	0	0	0	0
<b>Teaching methods</b>				
Lectures and laboratory work within the framework of research tasks. The first steps in scientific research are expected in certain areas within defined project tasks; students will be involved in the process of writing and presenting scientific papers.				
<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>			<b>Written exam</b>	
<b>Exercises</b>			<b>Oral exam</b>	50
<b>Colloquia</b>				
<b>Projects</b>		50		