

## Specification for the book of courses

<b>Study program</b>		Electrical Engineering and Computer Science		
<b>Module</b>		Control Systems		
<b>Type and level of studies</b>		Undergraduate Academic Studies		
<b>The name of the course</b>		Measurement Techniques in Power Engineering		
<b>Lecturer (for lectures)</b>		Živanović B. Dragan, Simić M. Milan		
<b>Lecturer/associate (for exercises)</b>		Simić M. Milan		
<b>Lecturer/associate (for OFE)</b>		Stojković S. Ivana, Jovanović R. Jelena		
<b>Number of ECTS</b>	5	<b>Course status (obligatory/elective)</b>	Elective	
<b>Prerequisites</b>				
<b>Course</b>	Understanding measurement methods and instrumentation in the field of electroenergetics.			
<b>Course outcomes</b>	The ability of students to use measurement instruments and systems in electroenergetics. Designing of measurement instrumentation for control and monitoring of electroenergetic systems.			
<b>Course outline</b>				
<b>Theoretical teaching</b>	Basics of electronic measurement instruments, measurement of time period, frequency and phase. Analog to digital converters. Isolation and grounding in measurement systems. Measurements of high voltages and currents. Measurement transformers. Measurement of power and energy. Measurements in three-phase systems. Measurement of quality of electrical energy. Virtual instruments in energetics. Measurements of non-electrical quantities, temperature, force, position, angular speed and momentum of the force.			
<b>Practical teaching (exercises, OFE, study and research)</b>	Exercises in laboratory with models and measurement instruments which illustrate basic measurement methods.			
<b>Textbooks/references</b>				
1	B. Bego, Measurement in Electrical Engineering, (in Serbian), Grafis 2003.			
2	Bagarić I. "Metrology of electrical quantities - Measurements and Measuring instruments", (in Serbian), Science, Belgrade 1996.			
3	S. Tumanski „Principles of Electrical Measurement“, Taylor&Francis, 2006.			
4	J. G. Webster: Instrumentation and Sensors Handbook, CRC Press			
5	W. Nawrocki, "Measurement systems and sensors", Artech House			
<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>
2	1	1	0	0
<b>Teaching methods</b>	Slide presentation and dialogue with students. Practical laboratory exercises. Individual and group consultations with teachers or assistant. Demonstration of measurement equipment. Practical laboratory exercises.			
<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>	5	<b>Written exam</b>	20	
<b>Exercises</b>	20	<b>Oral exam</b>	15	
<b>Colloquia</b>	40			
<b>Projects</b>				