Specification for the book of courses

Study program	Electrical Engineering and Computer Science		
Module	Electrical Power Engineering		
Type and level of studies	Undergraduate Academic Studies		
The name of the course	Industrial Measurement and Control Systems		
Lecturer (for lectures)	Dinčić R. Milan		
Lecturer/associate (for exercises)	Pešić T. Miroljub		
Lecturer/associate (for OFE)	Jocić V. Aleksandar		
Number of ECTS	5	**Course status (obligatory/elective)**	Elective
Prerequisites			
Course objectives	The aim of the course is to introduce students to the basic measurement principles in industrial measurements of non-electrical quantities. In addition to gaining knowledge in the field of sensors, the students will master the basic techniques of connecting the sensors, processing measurement results and realization of complete systems for measurement and process control.		
Course outcomes	Understanding the basic principles of the operation of industrial sensors. Ability to select sensors and measuring methods in individual practical applications. The ability to connect sensors to the system and to design electronic circuits for processing measurement signals. Ability to work with modern industrial measurement systems.		
Course outline			
Theoretical teaching	Basic measurement methods. Static and dynamic characteristics of measurement systems. Sensors and transducers in modern industrial measurement systems. Transducers of shifts, positions, speed, force, pressure, flow, level, smoke and temperature. Connection of sensors with computer system. Circuits for Measurement signal processing. Two-wire transmitters. Standard interface systems. SCADA systems. Wireless sensors. Virtual instrumentation. Reliability and maintenance of measurement systems. Modeling of measurement systems. Industrial measurement systems based on microprocessors.		
Practical teaching (exercises, OFE, study and research	Practice and laboratory exercises are performed in the field of measurement of non-electrical quantities (liquid level, pressure, temperature, speed, acceleration, etc.), as well as in areas of modern measurement systems based on microprocessors and measurement modules of type ADAM.		
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	J.Webster, “The measurement, instrumentation, and sensors handbook”, CRC Press, 2014.		
4	C. W. de Silva, "Sensors and Actuators - control systems, instrumentation", CRC Press, 2007.		
5			

Number of classes of active education per week during semester/trimester/year

Lectures	Exercises	OFE	Study and research work	Other classes
2	1	1	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			