

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		Measurement and Acquisition Systems		
Lecturer (for lectures)		Denić B. Dragan, Živanović B. Dragan		
Lecturer/associate (for exercises)				
Lecturer/associate (for OFE)				
Number of ECTS		10	Course status (obligatory/elective)	Elective
Prerequisites				
Course objectives		Establishment of knowledge necessary for the development and application of measurement and acquisition systems based on information technologies and microcomputer components		
Course outcomes		Mastering the scientific methods in the development and presentation of new DAQ cards solutions in the development of computer-based measurement systems for the acquisition, processing and display of measurement results in centralized and distributed measurement systems.		
Course outline				
Theoretical teaching		Physical and mathematical models of measurement process. Conversion methods of processed signals (ADC and DAC). Signal conditioning (linearization, amplification, filtering, etc.). Acquisition of measurement data (multiplexing, S & H circuits, converters). Universal Acquisition Card. Standard interfaces and communication protocols in acquisition modules. Automatic test systems based on DAQ with applications.		
Practical teaching (exercises, OFE, study and research)				
Textbooks/references				
1	S. Tumanski, "Principles of Electrical Measurement, Chapter 6. Computer Measuring Systems", CRC Press.			
2	A. Robert, "Witte Electronic Test Instruments: Theory and Applications", PTR Prentice Hall.			
3	E. Doebelin, "Measurement Systems. Application and Design", McGraw-Hill.			
4	J. Park, S. Mackay, "Practical data acquisition for instrumentation and control systems", Elsevier.			
5	W. Nawrocki, "Measurement systems and sensors", Artech House.			
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		Systematization of relevant publications, analysis of selected chapters, realization of seminar tasks, participation in realization of research project tasks and preparation of papers for publication in conferences and journals.		
Grade (maximum number of points 100)				
Pre-exam duties		Points	Final exam	Points
Activity during lectures			Written exam	
Exercises			Oral exam	50
Colloquia				
Projects		50		