Specification for the book of courses

Study program	Electrical Engineering and Computer Science		
Module	Control Systems		
Type and level of studies	Undergraduate Academic Studies		
The name of the course	System Identification		
Lecturer (for lectures)	Jovanović D. Zoran, Nikolić S. Saša		
Lecturer/associate (for exercises)	Milovanović B. Miroslav		
Lecturer/associate (for OFE)	Milovanović B. Miroslav		
Number of ECTS	5	**Course status (obligatory/elective)**	Obligatory
Prerequisites			
Course objectives	Gain knowledge about modern system identification techniques, iterative identification methods and be familiar with a recent computer software tools for system identification.		
Course outcomes	Know how to use in practice modern computer systems and software tools for system identification as well as application of identification in adaptive control systems.		
Course outline			
Theoretical teaching	Identification facilities and their classification. Identification algorithms. Convergence to identification algorithms. Active identification. Gradient identification method. One-dimensional and multi-dimensional regression models. Nonlinear regression method. Iterative identification methods. Passive identification methods. Planning the experiment. Formation of optimal identification algorithms. Identification of stochastic processes. Application of orthogonal functions in system identification. Intelligent system identification techniques. Identification of the fuzzy system. Application of Neuro Networks in Identification. Methods for assessing the quality of identification. Identification software.		
Practical teaching (exercises, OFE, study and research work)	Introduction to MATLAB System Identification Toolbox and its application in identification of a real dynamic system. Application of orthogonal rational functions and orthogonal filters in system identification. Applying the acquired knowledge in identifying the following systems: The liquid flow control system G.U.N.T. Flow Control Trainer RT522, Liquid Level Management System G.U.N.T. Level Control Trainer RT512, Pressure regulating system G.U.N.T. Pressure control trainer RT532, Temperature control system G.U.N.T. Temperature control trainer RT542.		
Textbooks/references			
1	B. Danković, D. Antić, Z. Jovanović, process identification (in Serbian), Faculty of Electronic Engineering, Niš, 2010.		
2	L. Ljung, “System identifikation”, Prentice Hill, New Jersey, 1997.		
3	P. Albertos, A. Sala, “Iterative Identification and Control”, Springer, 2002.		
4	MATLAB, System Identification Toolbox		
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; Laboratory Exercises; Computer Exercises; Consultations			

Grade (maximum number of points 100)			
Pre-exam duties	**Points**	**Final exam**	**Points**
Activity during lectures	10	**Written exam**	30
Exercises	30	**Oral exam**	30
Colloquia			
Projects			