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		Nanotechnology and Nanodevices		
Lecturer (for lectures)		Pantić S. Dragan		
Lecturer/associate (for exercises)				
Lecturer/associate (for OFE)				
Number of ECTS	10	**Course status (obligatory/elective)**	Elective	
Prerequisites				
Course	Gaining higher level of knowledge in the field of nanotechnology and nanocomponents.			
Course outcomes	Extended theoretical knowledge in the field of nanotechnology and nanocomponents, as well as the application of systems based on these components. The student should understand the basic principles and accept new knowledge.			
Course outline				
Theoretical teaching	Materials for nanodevices. Dielectric and ferroelectric materials (electronic properties and quantum effects), magnetic materials (magnetism and magnetotransport in layered structures), organic molecules (electronic structures, properties and reactions), neurons (molecular basis of their electrical excitability). Technological processes and analyzing methods. Nanostructure characterization. Geometric characterization. Surfaces and layers characterization. Functional characterization. Nanosensors and nanoactuators. Nanodevices. Contacts, quantum dots, nanodiodes, nanotranzistors, nanoswitches. Nanooptical devices. Logic nanodevices and RAMs. Mass storage devices. Nanosystems and their application.			
Practical teaching (exercises, OFE, study and research				
Textbooks/references				
1	Rainer Waser (Ed.), Nanoelectronics and Information Technology, Wiley-VCH, 2003.			
2	L.E. Foster, G. Allen, Nanotechnology: Science, Innovation, and Opportunity, Prentice Hall Professional Technical Reference, 2005.			
3	D.B. Baird, A. Nordmann, J. Schummer, Discovering the Nanoscale, IOS Press, 2004.			
4	M. Kohler, W. Fritzsche, An Introduction to Nanostructuring Techniques, 2005.			
5				

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	Lectures in the form of the Power Point presentations, including of students in realizations of Scientific-Research projects and BSc and MSc study assistance, seminar works.			

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		