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	Theory and Applications of Software Radio		
Lecturer (for lectures)	Milošević D. Nenad		
Lecturer/associate (for exercises)			
Lecturer/associate (for OFE)			
Number of ECTS	10	**Course status (obligatory/elective)**	Elective
Prerequisites			
Course	In this course, students gain knowledge of basic and modern concepts of software radio.		
Course outcomes	Students who successfully complete this course will be able to understand the products and software radio technology, to implement modern wireless systems, to have knowledge of the architecture of digital hardware and to understand the design methods.		
Course outline			
Theoretical teaching	The evolution of radio technology. Transmitter and receiver architecture. Antennas and RF front end. Multirate signal processing. Direct Digital Synthesis (DDS). Analog to digital and digital to analog conversion. Introduction to smart antennas and baseband signal processing. Antenna arrays and beamforming. Digital hardware choices. Software methods for software radio. Cognitive networking.		
Practical teaching (exercises, OFE, study and research	Students work independently on the project (project presentation with discussion).		
Textbooks/references			
1	J. Mitola III, Software Radio Architecture, John Wiley & Sons, 2000.		
2	T. Collins, R. Getz, Di Pu, A. Wyglinski, Software-Defined Radio for Engineers, Artech House Publishers, 2018.		
3	E. Grayver, Implementing Software Defined Radio, Springer-Verlag New York, 2013.		
4	Di Pu, A. Wyglinski, Digital Communication Systems Engineering with Software-Defined Radio, Artech House, 2013.		
5	J. H. Reed, Software Radio: A Modern Approach to Radio Engineering, Prentice Hall PTR, 2002.		

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	Giving lectures. Students work independently on the project (project presentation with discussion).			

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		