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		Digital Signal Processing		
Lecturer (for lectures)		Perić H. Zoran, Dončov S. Nebojša		
Lecturer/associate (for exercises)				
Lecturer/associate (for OFE)				
Number of ECTS	10	**Course status (obligatory/elective)**	Elective	
Prerequisites				
Course objectives	Acquiring theoretical knowledge, introduction to the latest achievements and research in the field of digital signal processing.			
Course outcomes	Expanded theoretical knowledge from the field of digital signal processing. Ability for solving problems from the studied field.			
Course outline				
Theoretical teaching	Discrete signals and systems. Discrete direct and inverse Fourier transform. Algorithms of direct and inverse fast Fourier transform. Direct and inverse z-transform. Discrete transfer functions. Discrete transforms (DCT, DFT, DWT). Digital recursive and nonrecursive filters and their realisations. Wave digital filters and realisations. Frequency and time analysis. Appliance of digital filters in the construction of linear predictors, both fixed and adaptive. Estimation of discrete signal's parameters. Digital signal processing in frequency domain. Basics of digital signal processing needed for subsegment coding (filter banks). Digital signal processors for filter realisations. Software package for digital signal processing MATLAB.			
Practical teaching (exercises, OFE, study and research	Lectures. Consultations. Work on project.			
Textbooks/references				
1	Nader Hamdy, Applied Signal Pocessing, CRC Press 2009			
2	M. V. Popovic, Digital Signal Processing (in Serbian), Science, Belgrade, 1994			
3	Lj. Stanković, Digital Signal Processing with Selected Topics: Adaptive Systems Time Frequency Analysis Sparse Signal Processing, Create Space Independent Publishing Platform, 2015.			
4	M.Vetterli, J. Kovacevic, V. K. Goyal, Foundations of Signal Processing, Cambridge University Press, 2014.			
5	D. G. Manolakis, V. K. Ingle, Applied Digital Signal Processing: Theory and Practice Cambridge University Press; 1st edition, 2011.			
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, project, consultations.			
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			