

Specification for the book of courses

Study program		Communications and Information Technologies		
Module		Communications and Information Processing		
Type and level of studies		Master studies		
The name of the course		Discrete Transformations with Applications		
Lecturer (for lectures)		Perić H. Zoran, Rančić Z. Lidija, Nikolić R. Jelena		
Lecturer/associate (for exercises)		Nikolić R. Jelena		
Lecturer/associate (for OFE)				
Number of ECTS		4	Course status (obligatory/elective)	Elective
Prerequisites				
Course objectives		Provide knowledge about discrete transforms and their application in signal filtration, approximation of functions and signal, and in signal compression. Define and successfully mentorize the specific project assignments in this field.		
Course outcomes		Theoretical knowledge about discrete transforms. Acquired practical experience in working with software tool for digital signal processing using discrete transforms.		
Course outline				
Theoretical teaching		Transforms and their significance. Discrete transforms, their meaning and significance. Discrete Fourier Transform. Discrete cosine and Discrete sine transform. Discrete wavelet transform. Hadamard transform. Walsh transform. KL transform. Application of discrete transforms in signal filtration. Application of discrete transforms in the approximation of functions and signals. Application of discrete transforms in signal and data compression.		
Practical teaching (exercises, OFE, study and research)		Practical exercises include solving problems from areas that are covered by the content of the subject. Practical exercises also include mentoring work with students in order to perform the project assignments.		
Textbooks/references				
1	P. Prandoni, M.Vetterli, Signal Processing for Communications, Communication and Information Sciences, 1st Edition, 2008.			
2	A. V. Oppenheim, R. W. Schaffer, Discrete-Time Signal Processing, Prentice-Hall, 3rd Edition, 2009.			
3	D. G. Manolakis, V. K. Ingle, Applied Digital Signal Processing: Theory and Practice Cambridge University Press; 1st edition, 2011.			
4	D. Milosevic, L. Rancic, M. Petkovic, Mathematics 4 (In Serbian), Faculty of Electronic Engineering, Nis, 2015.			
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
2	1	0	0	0
Teaching methods		Lectures, PowerPoint presentations, auditory exercises, project works, consultations.		
Grade (maximum number of points 100)				
Pre-exam duties		Points	Final exam	Points
Activity during lectures		5	Written exam	20
Exercises		20	Oral exam	20
Colloquia				
Projects		35		