

Specification for the book of courses

Study program		Electrical Engineering and Computer Science		
Module		Computing and Informatics		
Type and level of studies		Undergraduate Academic Studies		
The name of the course		Methods and Systems for Signal Processing		
Lecturer (for lectures)		Radmanović M. Miloš		
Lecturer/associate (for exercises)		Radmanović M. Miloš		
Lecturer/associate (for OFE)		Radmanović M. Miloš		
Number of ECTS	5	Course status (obligatory/elective)	Elective	
Prerequisites				
Course objectives	Understanding the principles for processing digital signals and the possibilities of their application in solving practical problems.			
Course outcomes	Students should know the methodology for processing digital signals and they are able to independently solve problems and implement applications in this field.			
Course outline				
Theoretical teaching	Correction of errors using: Reed-Solomon Code, Reed-Muller Code, CRC Code, Convolution Codes, Turbo Codes, LDPC Codes. Compression using: prefix coding, Shannon-Fano coding, Huffman coding, adaptive Huffman coding, LZ77 algorithm, arithmetic coding.			
Practical teaching (exercises, OFE, study and research)	Student projects include an overview of the theoretical background of the problem, as well as the appropriate practical implementation of the methods and systems for processing signals in the programming language C/C++/C#.			
Textbooks/references				
1	Moon, T. K., Error Correction Coding - Mathematical Methods and Algorithms, John Wiley & Sons, 2005.			
2	Solomon, D., Data Compression - The Complete Reference, Springer, 2004.			
3	Carrasco, R., Johnston, M., Non-Binary Error Control Coding for Wireless Communication and Data Storage, John Wiley & Sons, 2008.			
4	Stankovic, R. S., Moraga, C., Astola, J. Fourier Analysis On Finite Groups With Applications In Signal Processing And System Design, John Wiley And Sons Ltd, 2005.			
5	Documents on Web site: http://cs.elfak.ni.ac.rs/nastava/			
Number of classes of active education per week during semester/trimester/year				
Lectures	Exercises	OFE	Study and research work	Other classes
2	2	1	0	0
Teaching methods	Lectures and demonstration exercises using slides and demo examples. Creating a project using the C/C++/C# environment. Independent study work on project preparation and implementation.			
Grade (maximum number of points 100)				
Pre-exam duties		Points	Final exam	Points
Activity during lectures			Written exam	20
Exercises		20	Oral exam	40
Colloquia		20		
Projects				