

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		Advanced Signal and Data Processing		
Lecturer (for lectures)		Perić H. Zoran, Nikolić R. Jelena		
Lecturer/associate (for exercises)				
Lecturer/associate (for OFE)				
Number of ECTS	10	Course status (obligatory/elective)	Elective	
Prerequisites				
Course objectives	Providing knowledge about advanced signal and data processing. Training students to write scientific papers in this very current field of research.			
Course outcomes	Students will be able to understand, classify, analyze and process different signals and data and to design new or improved solutions to the problem of signal processing related to specific applications.			
Course outline				
Theoretical teaching	Estimation of signal parameters. Adaptive signal processing. Kalman and adaptive filtering. Compression of signals and data based on advanced techniques and algorithms. Compressive sensing. Introduction to statistical learning. Adaptive methods of statistical learning and data processing. Soft calculation methods. Classification and clustering techniques.			
Practical teaching (exercises, OFE, study and research)	Lectures.Consultations. Project work.			
Textbooks/references				
1	G. James, D. Witten, T. Hastie, R. Tibshirani, An Introduction to Statistical Learning with Applications in R, Springer, 2017.			
2	Y. C. Eldar, G.Kutyniok, Compressed Sensing: Theory and Applications, Cambridge University Press, 2012.			
3	U.Spagnolini, Statistical Signal Processing in Engineering, Wiley, 2018.			
4	M.Vetterli, J. Kovacevic, V. K. Goyal, Foundations of Signal Processing, Cambridge University Press, 2014.			
5	Lj. Stanković, Digital Signal Processing with Selected Topics: AdaptiveSystems Time Frequency Analysis Sparse Signal Processing, Create Space Independent Publishing Platform, 2015.			
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, Power Point presentations, Consultations.			
Grade (maximum number of points 100)				
Pre-exam duties	Points	Final exam		Points
Activity during lectures	5	Written exam		
Exercises	30	Oral exam		35
Colloquia				
Projects	30			