

Specification for the book of courses

Study program		Electrical Engineering and Computer Science		
Module		Communications and Information Technologies - Communications and Information Processing		
Type and level of studies		Undergraduate Academic Studies		
The name of the course		Fourier Analysis and Applications		
Lecturer (for lectures)		Rančić Z. Lidija, Matejić M. Marjan		
Lecturer/associate (for exercises)		Rančić Z. Lidija, Matejić M. Marjan		
Lecturer/associate (for OFE)		Rančić Z. Lidija, Matejić M. Marjan		
Number of ECTS	6	Course status (obligatory/elective)	Elective	
Prerequisites				
Course objectives				
Mastering the general principles and techniques of applying Fourier analysis. Training students to apply acquired knowledge to solve engineering problems, especially problems in signal theory, information-communication techniques.				
Course outcomes				
Developed ability to identify problems in the field of interest and their solving by the methods of Fourier analysis. The ability to use acquired knowledge and skills in further education and practice. The ability of students to solve problems from their profession by using a software package.				
Course outline				
Theoretical teaching				
Fourier series. Fourier integral, Fourier transform and inverse Fourier transform. Distributions. Convolution and correlation. Discrete Fourier transform. Fast Fourier transform. Cosinus Fourier transform, continuous and discrete. Multidimensional Fourier transform and application in image processing. Window functions. Applications in solving practical engineering and scientific problems. MatLab implementation.				
Practical teaching (exercises, OFE, study and research)				
Identifying and solving problems that follow the theoretical part of the course. Through laboratory exercises, it is possible to see the true nature of the proposed algorithms and their implementation.				
Textbooks/references				
1	Dušan Milošević, Lidija Rančić, Miodrag Petković, Mathematics IV, Faculty of Electronic Engineering, University of Niš, 2015			
2	Brad Osgood, Lecture Notes for EE 261 The Fourier Transform and its Applications, Electrical Engineering Department Stanford University			
3	e-presentation - https://moodle.elfak.ni.ac.rs/			
4				
5				
Number of classes of active education per week during semester/trimester/year				
Lectures	Exercises	OFE	Study and research work	Other classes
2	1	2	0	0
Teaching methods				
Lectures, auditory exercises, consultations				
Grade (maximum number of points 100)				
Pre-exam duties	Points	Final exam	Points	
Activity during lectures	10	Written exam	20	
Exercises	10	Oral exam	20	
Colloquia	40			
Projects				