

Specification for the book of courses

Study program		Electrical Engineering and Computer Science		
Module		Electronics		
Type and level of studies		Undergraduate Academic Studies		
The name of the course		Processing Audio and Music Signals		
Lecturer (for lectures)		Stančić Z. Goran		
Lecturer/associate (for exercises)		Stančić Z. Goran		
Lecturer/associate (for OFE)		Stančić Z. Goran		
Number of ECTS	5	Course status (obligatory/elective)	Elective	
Prerequisites				
Acquiring basic knowledge in the field of basic and advanced techniques for audio and music signal processing. Introduction to the methods for design of analog and digital filters for practical implementation in audio processing.				
Course objectives				
Students are trained for independent design and realization of analog and digital filters for audio and music signal processing.				
Course outcomes				
Students are trained for independent design and realization of analog and digital filters for audio and music signal processing.				
Course outline				
Theoretical teaching				
Sources of sound, audio signal digitalization, digital recording of audio signal, prewrite signal processing, noise reduction, psihoacoustics, masking in the frequency domain, sub-band coding, filters for audio and music signal processing, spectral signal analysis, comb filters, time variable filters in audio effects, Schroeder's reverberator, principles of digital models of musical instruments.				
Practical teaching (exercises, OFE, study and research)				
Echo generator, reverberator realization, equalizer, allpass filters in signal processing, uniform and nonuniform filter banks, sampling rate changing, digital sine wave generators, up-samplers and down-samplers, polyphase decomposition, sub-band coding of audio signal				
Textbooks/references				
1	Sanjit Mitra, Digital signal processing A computer based approach, 2006			
2	Julius O. Smith, Introduction to digital filters with audio applications, 2006			
3	Ian Sinclair, Audio and HI-FI Handbook, 1998			
4	Andreas Spanias, Ted Painter, Venkatraman Atti, Audio Signal Processing and Coding, 2006			
5				
Number of classes of active education per week during semester/trimester/year				
Lectures	Exercises	OFE	Study and research work	Other classes
2	1	1	0	0
Teaching methods				
Lectures, auditory exercises, laboratory exercises, consultation				
Grade (maximum number of points 100)				
Pre-exam duties		Points	Final exam	Points
Activity during lectures			Written exam	30
Exercises			Oral exam	40
Colloquia				
Projects		30		