

Title Signal Processing basics and algorithms II - DSP	Code 1018011410108300065
Field Electronics and Telecommunications	Year / Semester 2 / 4
Specialty -	Course core
Hours Lectures: 3 Classes: - Laboratory: 2 Projects / seminars: -	Number of credits 0
Language polish	

Lecturer:

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Status of the course in the study program:

Compulsory course on Electronics and Telecommunications studies.

Assumptions and objectives of the course:

Understanding of digital representation of signals as a series of samples, signal processing algorithms, analog and digital signal processing - similarities and differences.

Contents of the course (course description):

Comparison of digital and analog signal processing techniques. Sampling, sampling theorem. Signal quantization. z-transform. Discrete linear systems theory. Discrete-time Fourier transform and Discrete Fourier transform. Structures of digital filters, effects of digital filters coefficient quantization. Design of FIR filters (windowing method, equiripple filters, frequency-domain design), and design of IIR filters (impulse response-invariant method, bilinear transform method). Multi-dimensional systems. Fast Fourier transform. Multirate systems and filter banks. Interpolation and decimation. Stochastic signal processing - non-parametric power spectrum density estimation.

Introductory courses and the required pre-knowledge:

Analog signal processing theory (first part of the course), system theory.

Courses form and teaching methods:

Lecture - 45 hours per semester, laboratory (30 hours) based on MATLAB system, and digital signal processor kits.

Form and terms of complete the course - requirements and assessment methods:

Exam ending the lecture, individual laboratory projects.

Basic Bibliography:

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Additional Bibliography:

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