**Signal Processing (ECTS 6)**

Language: the course is offered in English, Serbian and Hungarian.

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**Course description:**

The course covers the basic concepts of analog and discrete signal processing. Signal analysis techniques in the time as well as in the spectral domain are listed. The importance of the correlation method of signal analysis is explained. Different transformations of analog and discrete signals for studying their spectra are given. The basic forms of analog and discrete filters are mentioned. The signal sampling technique is studied.

This course would cover the following topics, both as lectures and exercises:

1. Repetition of the application of basic mathematical formulas and methods.
2. Analog signal description
3. Fourier series and Fourier transform, signal spectra
4. Periodic convolution and correlation
5. Analog systems and they transfer function
6. Signal sampling, AD and DA conversion
7. Discrete signal description, signal periodicity
8. Discrete time convolution and correlation
9. Discrete systems and they time domain description
10. The Fourier transform of discrete time signal
11. The Z-transform
12. Discrete Fourier series
13. Discrete Fourier transform, FFT algorithms
14. Closing remarks

**Aims:**

The goals are the following:

Application of the correlation method in signal and system analysis. Ability to interpret signal spectra and systems. Skills of designing basic signal processing filters. Ability to design signal sampling systems.