**Signals and Systems (ECTS 5)**

Contact person: Dr. Lívia Szedmina (slivia@vts.su.ac.rs)

Language: The course is offered in Serbian and Hungarian

Course description:

The course covers topics related to the concept of signals and systems: continuous and discrete signals and systems, modelling and simulation of systems, LTI systems, Fourier transform, frequency domain analysis, Laplace transform, z-transform, FIR and IIR filters, A/D and D/A converters. Exercises include different simulations based on the topics.

The course covers the following topics, both as lectures and exercises:

1. Introduction. Basic concepts of signals and systems.
2. Modelling and simulation of systems.
3. Non-linear elements. Linearization of systems.
4. Description of systems in state space. Basics of MIMO systems.
5. Continuous systems. SISO LTI systems.
6. Fourier transform. Spectrum of signals.
7. Frequency domain analysis. Bode diagram. Filters.
8. Laplace transform. Stability of systems.
9. Poles and zeros. P, I, D, PT1 and PT2 members.
10. Discrete signals and systems.
11. z-transform.
12. FIR and IIR filters.
13. A/D and D/A converters.
14. Stochastic signals and systems.
15. Repeat. Conclusion of the semester.

Aims:
The goal of the course is to introduce students with the basic concepts of signals and systems, and basic methods used for their analyzation. Upon completion, the students should be able to understand different systems, construct models and do simulations.