**Data Transmission and Industrial Communication (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 data transmission in an industrial environment. A description of the basic elements of signal processing as well as information theory is given. The most common communication standards and protocols for data transmission in the industrial environment are listed.

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

1. Introduction to data transfer
2. Data signals and its spectral analysis
3. Physical media for data transfer
4. Analog to Digital and Digital to Analog conversion, Sampling theorem
5. Source Coding
6. Channel Coding, Error Correcting Codes
7. Analog and Digital modulation
8. Data transfer and communication in industrial environment
9. Data Communication Standards
10. RS-232, RS-485
11. Modbus, IEC 60870
12. Profibus, Fieldbus
13. CAN bus, SCADA
14. HART, IIoP
15. Closing remarks

**Aims:**

The goals are the following:

Understanding the principles of data transmission in an industrial environment. Understanding the role of the basic elements of the communication system. The ability to select and apply an appropriate communication standard and protocol in a given industrial environment.