



COURSE DATASHEET

Semester:	2016/17/1
Course:	Instruments, measurement technology and automation of water treatment
Code:	NKMKFIT115V
Responsible department:	
Department code:	MKNK
Responsible instructor:	dr. István Szalai

Course objectives:

The aim of the course is to introduce the measurement methods and instruments used in water treatment.

Course content:

1. Basic concepts of measurement technology, the structure and operation of instruments and on-line devices.
2. Instrumental water chemistry analysis I.: pH, ion selective electrodes, redox electrodes and signal processing.
3. Instrumental water chemistry analysis II.: UV, visible and infrared optical instrumentation. Turbidity measurement.
4. Specific conductance and zeta potential measurement.
5. Biological activity measurement.
6. Measuring thermodynamic properties: temperature, pressure, flow velocity.
7. Measurement of dissolved gas concentrations.
8. Process control instruments (data acquisition, single loop controller (SLC), PLC, DCS, industrial PC).
9. PLC hardware components, communication protocols.
10. PLC programming.
11. Water treatment process control. Final control elements (valves, pumps, etc.)
12. Pressure, Aeration control.
13. Data acquisition, data processing, alarm and safety functions.
14. Monitoring systems.

Requirements, evaluation and grading:

The whole content of lectures and the assignments are included in the written examination.

Required and recommended readings:

Gyuricza István, Dr. Ajtonyi István - Programozható irányítóberendezések - Hálózatok és rendszerek, Műszaki Könyvkiadó, 2002



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Required and recommended readings:

Zoltán István : Méréstechnika , Egyetemi tankönyv, Műegyetemi Kiadó, 1997
Dr. Inczedy János - Folyamatos és automatikus analízis Műszaki Könyvkiadó, 1984
Dr. Ajtonyi István: PLC és Scada-HMI rendszerek I. PLC programozás az IEC 61131-3 szabvány szerint. Aut-Info Kft. 2007