



## COURSE DATASHEET

<b>Semester:</b>	2013/14/1
<b>Course:</b>	Environmental Processes and Technologies Practices
<b>Code:</b>	VEMKKVM265T
<b>Responsible department:</b>	Department of Environmental Engineering
<b>Department code:</b>	MKKV
<b>Responsible instructor:</b>	dr. Árpád Kárpáti

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### Course objectives:

To become familiar with practical realization of examples, preparation of project design

### Course content:

#### Seminarium:

Water treatment -wastewater treatment : Ion exchange pretreatment and up-to-date membrane separation of salt removal from water, disinfection without chlorine, removal of organic micro-pollutants during drinking water production; up-to-date processes and applications for removal of organic compounds in wastewater treatment, removal of chemical organic compound, nitrogen and phosphor by using biological treatment or by using simultaneous mode.

Air pollution control: The role of material structural investigations (infrared spectroscopy, X-ray diffraction, thermo analysis methods etc.) in air pollution control, study of adsorbents, catalysts. The bases of mathematical modeling of air pollution control measures.

Waste management: Waste disposal sites as point-source pollution. Pollution detection. The most important methods of harm prevention.

#### Laboratory practices:

Air pollution control: the role of material structural investigations in air pollution control, characterization of catalysts and adsorbents, thermogravimetry, infrared spectroscopy, temperature programmed adsorption and desorption.

Water treatment -wastewater treatment : biological degradability, investigation of chemical oxidation using hydrogen peroxide with presence of different catalysts, opportunities of electrochemical processes in water and wastewater treatment; applying molecular sieves in biological treatment

### Requirements, evaluation and grading:

written report, project design

### Required and recommended readings:

Benedek P. - Valló S.: Víz tisztítás, szennyvíztisztítás. Zsebkönyv 4. átdolgozott kiadás, MK, Budapest, 1990.  
Lakossági szennyvizek aerob tisztítása eleveniszapos és más módszerekkel. Ismert-gyűjtemény No. 3. VE, KmKT Tanszék (2002), Összeállította Kárpáti Á.,



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### Required and recommended readings:

Sipos Zoltán: Ipari levegőtisztaság védelem. Műszaki Könyvkiadó, Budapest, 1987.  
Seymour Calvert, Herold M. Englund: Handbook of air pollution technology, John Wiley & Sons, New York, 1984  
Szabó Imre: Hulladékéelhelyezés, Miskolci Egyetemi Kiadó, Miskolc, 1999.  
<http://www.ktm.hu/>, 2005-06-22