



COURSE DATASHEET

Semester:	2014/15/1
Course:	Modern Methods in Environmental Analysis
Code:	VEMKKAB111K
Responsible department:	Department of Analytical Chemistry
Department code:	MKKA
Responsible instructor:	dr. Péter Hajós

Course objectives:

An understanding of the principles and environmental applications of modern analytical methods

Course content:

1. Classification of Environmental Analysis . Basic concepts (chromatography, spectroscopy). Sampling methods, sampling preparation. (complex formation, extraction, ion exchange) 2. Classification of Chromatography (HPLC, GC, EC). Relationships of Retention (selectivity, performance, resolution). Experimental variables . 3. Liquid Chromatography (adsorption, partition, normal- and reversed phase systems). PAH and detergent analysis. 4. Ion-, Ion pair-, and Ion –exclusion chromatography. Analysis of organic and inorganic acids. Water, waste water and acid rain analysis. 5. Gas chromatography. Pesticide analysis. Polychlorinated diphenyls. 6. Electrochromatography (zone- and capillary electrophoresis, isoelectric focusing). Thin-layer chromatography. Amino acid analysis. 7. Detectors for environmental samples. (ECD, FID, UV, RI, conductivity detectors, sensitivity, detection limit) 8. Atomic spectroscopy for Metal Species. 9. ICP spectroscopy. Trace analysis. 10. Gas-spectroscopy. FT-IR analysis of air pollutants. 11. Thermoanalytical methods. Soil and brine analysis. 12. High performance hyphenated methods (GC-MS, GC-FTIR, HPLC-MS, 2DGC, HPLC-ICP-MS) 13. Speciation. Analysis of metal organic compounds (Pb, Hg,As, Cr) 14. Chemical sensors in environmental analysis. 15. Toxicity. Quality Control Procedures. Risk assessment.

Requirements, evaluation and grading:

The topics of the lectures

Required and recommended readings:

D. A. Skoog, J. J. Leary: Principles of Instrumental Analysis, Saunders College Publishing, 1992. J. Lawrence: Liquid Chromatography in Environmental Analysis, Humana Press, 1984. Előadásvázlat és ábrák (80 oldal) fénymásolt változatban a hallgatók rendelkezésére áll.