

Title of the course: Analytical chemistry	NEPTUN-code: RKXAK1ABNE	Weekly teaching hours: <i>l+cw+lb</i> 1+0+2	Credit: 3 Exam type: tm
Course leader: Ágnes Bálint-Mészáros, Dr.	Position: associate professor	Required preliminary knowledge: RMXCA2KBNE	
Curriculum:			
<p>Subject of the analytical chemistry and its role in environmental protection. Qualitative analysis (cations, anions). Basics of volumetric analysis (titrimetric methods) and areas of application (acid-base, precipitation titrating, redox titration, conductometry etc). The enrichment and separation of trace substances principles various environmental media (liquid-liquid extraction, solid phase, microwave digestion, absorption pipes, evaporation, centrifugation, etc.). Fundamentals and types of chromatography (gas chromatography, liquid chromatography, ion chromatography, capillary electrophoresis ash etc). The principle and types of Molecular spectroscopy (UV-visible, infrared, fluorescence-, mass spectroscopy, etc.). Principle and types of Atomic spectroscopy (atomic absorption-, ICP, X-ray fluorescence spectroscopy etc). Confidence of different analytical methods, validation, standardization.</p>			
Professional competencies:			
<p>Knowledge of general and specific mathematical, natural and social scientific principles, rules, relations, and procedures as required to pursue activities in the special field of environment protection.</p> <p>In possession of state-of-the-art IT skills, being able to use professional databases and certain design, modelling, and simulation software depending on their specialty.</p> <p>Knowledge of the learning, knowledge acquisition, and data collection methods of the special fields of environment protection, their ethical limitations and problem solving techniques.</p> <p>Comprehensive knowledge of the basic features and interrelations of environmental elements and systems, as well as of the environmentally harmful substances affecting them.</p> <p>Knowledge of the methodology and legal regulations for performing environmental impact assessments and for compiling impact studies.</p> <p>Able to perform basic tests of the quantity and quality characteristics of environmental elements and systems by state-of-the-art measuring instruments; to draw up and implement measurement plans; and to evaluate data.</p> <p>Able to solve tasks of water, soil, air, radiation, and noise protection, as well as of waste treatment and processing at proposal level; to participate in preparing decisions; to perform authority audits; and to take part in the operation of these technologies.</p> <p>Able to perform environmental impact assessments and to participate in compiling impact studies.</p> <p>Able to apply in practice as well the regulations and requirements of health and safety, fire protection, and safety engineering as related to their special field.</p>			
Literature:			
<p>1. David Harvey: Modern Analytical Chemistry, McGraw Hill, Boston Burr Ridge, IL Dubuque, IA Madison, WI New York, San Francisco, St. Louis, Bangkok, Bogotá Caracas, Lisbon, London, Madrid, Mexico City, Milan, New Delhi, Seoul, Singapore, Sydney, Taipei, Toronto, 2000</p>			
<p>2. Gary D. Christian: Analytical Chemistry, John Wiley and Sons Inc., 2004</p>			

3. Edited by Ira S. Krull: Analytical Chemistry, ISBN 978-953-51-0837-5, 154 pages,
Publisher: InTech, Chapters published November 07, 2012 under CC BY 3.0 license
DOI: 10.5772/3086

Comment: