Course Unit Descriptor

Study Programme: Environmental Engineering			
Course Unit Title: Environmental data analysis			
Course Unit Code: Z305A			
Name of Lecturer(s): Maja Turk-Sekulic			
Type and Level of Studies: Bachelor level			
Course Status (compulsory/elective): compulsory			
Semester (winter/summer): winter			
Language of instruction: English			
Mode of course unit delivery (face-to-face/distance learning): face-to-face			
Number of ECTS Allocated: 6			
Prerequisites: Chemical Principles in Environmental Engineering			
Course Aims: The acquisition of basic knowledge of instrumental methods of chemical analysis in the field of engineering necessary protection of water, air and land. Introduction to modern methods of experiment design, processing, and analysis of experimental data.			
Learning Outcomes: Acquired knowledge, students will use in the analytical evaluation and statistical analysis of data about levels of contamination, methods of deposition and dynamics of dispersion of pollutants in a variety of biotic and abiotic environmental matrices.			
Syllabus: The structure of pure substances. Properties and behavior of gases solid and liquid substances. Dispersed systems. Solutions. Phase equilibrium, Gibbs' phase rule, two and three component systems. Physical and chemical adsorption, heat of adsorption, adsorption isotherms.Catalysis, catalytic reactions, the theory of heterogeneous catalysis, homogeneous catalysis. An experiment in practice. approach to experimental research, planing of experiment.Types of errors. Systematic errors. Random errors. Rough experimental errors.The accuracy and precision of the experimental results.Processing of the experimental results.Graphical analysis of the experimental results.Statistical analysis of the experimental results. Analytical methods.Chemical, sensory, biochemical and instrumental analytical methods.Spectroscopy. Theoretical basis and types of spectroscopy.Instruments in optical spectroscopy. Theoretical basis of separation methods. Chromatography.			
Required Reading: Relevant literature in English, tbd			
Weekly Contact Hours: 6	**Lectures: 3**	**Practical work: 3**	
Teaching Methods: Lectures. Laboratory and computing practice. Consultation - individual and group. During the semester, students are required to attend lectures, laboratory and computational practices. After successfully realized examination prerequisites, students take the written (computing) and oral (theoretical) part of the final exam. The written part of the exam can be taken through the two colloquiums.			
Knowledge Assessment (maximum of 100 points):			
Pre-exam obligations	points	**Final exam**	points

Group Assignment		Examination Assignment	
Exercises			
Test			
Test			
The methods of knowledge assessment may differ; the table presents only some of the options: written exam, oral exam, project presentation, seminars, etc.			