

Study Programme: Master Academic Studies in Chemistry			
Course Unit Title: Analytics of Organic Pollutants			
Course Unit Code: IHA-511			
Name of Lecturer(s): Associate professor Daniela Šojić Merkulov			
Type and Level of Studies: Master of Science Degree			
Course Status (compulsory/elective): Elective			
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: None			
Course Aims: The goal of the course is to expand theoretical and practical knowledge and understanding in the field of analytical chemistry of organic pollutants of air, water and soil. Students will be trained in modern and adequate procedure for the removal and degradation of persistent organic pollutants and intermediates from the environment using appropriate analytical techniques.			
Learning Outcomes: Students should be able to: <ul style="list-style-type: none"> - explain the impact of persistent organic pollutants in the environment, - suggest a modern and adequate procedure for the removal of persistent organic pollutants (pesticides, pharmaceuticals, dyes, phenols, polycyclic aromatic hydrocarbons) from the environment, - apply acquired knowledge of chromatographic techniques and methods of determining total organic carbon in solving unknown analytical problems during the decomposition process of organic pollutants, - apply acquired knowledge in qualitative and quantitative analysis of a variety of organic pollutants and products that arise during the process of their decomposition, and - clearly and accurately analyze and interpret the experimental results obtained by using appropriate analytical techniques. 			
Syllabus: <i>Theory</i> Organic pollutants in general: types of organic pollutants. Sources of pollution. Persistent organic pollutants. Structure, sources, properties, stability, solubility, toxicity, resistance to degradation, evaporation, bioaccumulation of persistent organic pollutants. Pesticides, polycyclic aromatic hydrocarbons, mineral oils, dyes, phenols, soaps and detergents. Petroleum and related products. <i>Practice</i> The application of liquid and gas chromatography for the qualitative and quantitative analysis of a variety of organic pollutants.			
Required Reading: <ol style="list-style-type: none"> 1. Stanley E. Manahan, Fundamentals of Environmental Chemistry, 8th Ed, CRC, 2004 2. W. G. Landis, M.-H. Yu, Introduction to Environmental Toxicology: Impacts of Chemicals Upon Ecological Systems, 3rd Ed. CRC, 2003 3. D. A. Crowl, J. F. Louva, Chemical Process Safety: Fundamentals with Applications, 2nd Ed, Prentice Hall, 2001 			
Weekly Contact Hours:	Lectures: 2 (30)	Practical work: 3 (45)	
Teaching Methods: Lectures, laboratory work, seminar(s)			
Knowledge Assessment (maximum of 100 points): 100			
Pre-exam obligations	points	Final exam	points

Active class participation	5	written exam	20
Practical work	25	oral exam	20
Seminar(s)	30		