

Studying course: Forestry and Natural Resources Management			
Subject: Environmental chemistry			
Professor/professors: dr Milica Rančić			
Status of the subject: Elective			
ECTS number: 5			
Condition: -			
Goal of the subject: Environmental chemistry is an introduction to chemical processes that regulate the composition of air, water, and soil. The main attention of the course is paid to the understanding of chemical equilibrium and kinetics of natural systems and how they are influenced by human actions. Additional topics of study include sources, effects, and remediation of pollution, principles of green chemistry and the analysis of environmental samples.			
Result of the subject: Through the course students acquire capability to: <ul style="list-style-type: none"> • express an understanding of the global connections between chemical cycles and human activities • explain how chemical theories are applied to understand models of global processes and systems • reflect upon how global relations affect the flow of chemical systems in the environment in ways that impact our life Through the course, students become able to provide balanced assessments of positive and negative aspects of recent development in our environment.			
Content of the subject			
<u>Theoretical part:</u> <ul style="list-style-type: none"> • Introduction to environmental chemistry • Stratospheric chemistry: Global warming; Ozone layer; Ozone holes • Chemistry of ground-level air pollution • The environmental and health consequences of polluted air—outdoors and indoors • Global warming; The greenhouse Effect • The chemistry of natural waters • The pollution and purification of water • Toxic heavy metals • Pesticides • Dioxins, furans, and PCBs • Other toxic organic compounds of environmental concern; • Persistent organic pollutants (POPs) • Renewable energy; Hazardous wastes, soils, and sediments 			
<u>Practical part:</u> <ul style="list-style-type: none"> • Introduction to environmental chemical analysis laboratory • Sample preparation, sampling methods and data processing • Solutions, preparing solutions and measures of concentrations • Analytical methods for analyzing quality of air, water and soil (volumetric, spectrophotometric and electrochemical techniques) • Modern analytical methods for determining pollutants in air, water and soil (colorimetry, spectrophotometry and absorption spectra; metals in natural waters and in sediments; atomic absorption spectrometry; the chemical oxygen demand of natural waters and wastewaters; the fluorimetric determination of polycyclic aromatic hydrocarbons; environmental hydrocarbons; carbon dioxide in the atmosphere; acid rain; decomposition of pollutants with an application to plasticizers and detergents). 			
References: <ol style="list-style-type: none"> 1. Julian E. Andrews, Peter Brimblecombe, Tim D. Jickells, Peter S. Liss, Brian Reid, <i>An Introduction to Environmental Chemistry</i> (2004) School of Environmental Sciences, University of East Anglia, United Kingdom, Blackwell publishing 			
Number of active teaching lessons:	Theoretical part of teaching:	Practical part of teaching:	
Methods of giving lectures: Lectures, laboratory work, seminars, consultations.			
Knowledge evaluation (max 100 points)			
Before exam obligations:	points	Final exam:	points
activity during lectures	5	written exam	
practical teaching	5	oral exam	50
colloquium(s)	20	
seminar(s)	20		