(Table 5.2) Course unit description

Study program: Chemistry				
Type and level of studies: MSc				
Course unit: Remediation				
Teacher in charge: Marina Cendic Serafinovic				
Language of instruction: English				
ECTS: 5				
Prerequisites: /				
Semester: winter				
Course unit objective To familiarise students with the possible occurrence and types of environmental accidents and methods for their remediation. To equip students to independently analyse and apply remediation methods.				
Learning outcomes of Course unit Upon successful completion of this course, students are expected to: explain the types and causes of environmental accidents; identify pollutants and analyse their behaviour in the environment; assess the impact of accidents on air, water and soil based on physicochemical parameters; analyse geological, hydrological and atmospheric factors affecting the spread of pollution; apply sampling and analytical methods during environmental accidents; select and apply appropriate remediation methods according to the type of contamination; compare remediation technologies in terms of effectiveness and sustainability; interpret analytical results and draw conclusions about contamination levels; propose prevention and risk management measures; and apply relevant national and international environmental regulations.				
Course unit contents *Theoretical classes: Polluters and pollutants. Natural sensitivity and vulnerability of the geological environment to pollution. Accident prevention measures and environmental restoration methods. Precursors of environmental accidents. Types of pollutants and their behaviour in the environment. Environmentally significant chemicals and chemical toxicity. Sources of environmental accidents. Types and locations of sampling during accidents; parameter analysis. Accidental releases into air, water and soil. Transboundary impacts of accidents. Accident documentation and public information. Early warning systems. National and international regulations.* *Practical classes: Audiovisual presentations of chemical accidents and their remediation. Field instruction (national institutions, municipal fire brigades, factories and industrial facilities).*				
Literature 1. N. Krešić, S. Vujasinović, I. Matić, Remediation of Groundwater and the Geological Environment [original in Serbian], Faculty of Mining and Geology, University of Belgrade, Belgrade, 2006. 2. Encyclopedia – Environment and Sustainable Development [original in Serbian], collective authorship, Belgrade, 2003. Supplementary Literature 1. Accident Precursor Analysis and Management: Reducing Technological Risk Through Diligence, The National Academies Press, Washington, 2004. 2. OECD Guiding Principles for Chemical Accident Prevention, Preparedness and Response, OECD Environment, Health and Safety Publications, Paris, 2003.				
Number of active teaching hours				
Lectures:2	Practice:2	Other forms of classes:	Independent work:	Other classes:

Teaching methods

Lectures, midterm tests, seminars and practical exercises. Practical instruction is conducted through visits to national institutions, municipal fire brigades, industrial enterprises and factory facilities.

Examination methods (maximum 100 points)

Exam prerequisites	No. of points	Final exam	No. of points
Practical classes	10	Written examination	20
Tests	10	Oral examination	30
Homework	10	Other	
Seminars	10		
Project	10		

Grading system

Grade	No. of points	Description
10	>= 91	Excellent
9	81-90	Exceptionally good
8	71-80	Very good
7	61-70	Good
6	51-60	Passing
5	<=50	Failing