

Course Unit Descriptor

<b>Study Programme:</b> Bachelor Academic Studies in Environmental Protection – Environmental Protection Analyst, Bachelor Academic Studies in Chemistry - Quality Control and Environmental Management		
<b>Course Unit Title:</b> Environmental Monitoring		
<b>Course Unit Code:</b> KK-501		
<b>Name of Lecturer(s):</b> Full Professor Milena Bečelić-Tomin		
<b>Type and Level of Studies:</b> Bachelor of Science Degree		
<b>Course Status (compulsory/elective):</b> Compulsory for Bachelor Academic Studies in Environmental Protection – Environmental Protection Analyst Elective for Bachelor Academic Studies in Chemistry - Quality Control and Environmental Management		
<b>Semester (winter/summer):</b> Winter		
<b>Language of instruction:</b> English		
<b>Mode of course unit delivery (face-to-face/distance learning):</b> Face-to-face		
<b>Number of ECTS Allocated:</b> 9		
<b>Prerequisites:</b> None		
<b>Course Aims:</b> Students learn to design environmental monitoring program. This course provides the base for a more detailed knowledge for the application of various techniques in environmental monitoring, methods and procedures for obtaining information on environmental quality and data analysis in order to manage the environment.		
<b>Learning Outcomes:</b> Obtain the necessary knowledge in the field of environmental sampling, selecting the method of analysis, data management, data analysis, reporting and finally using the information for the purpose of environmental management.		
<b>Syllabus:</b> <i>Theory</i> Identification of the required information for environmental management. Assessment of information that can be obtained by water, air, soil monitoring program (defining a representative sample of the population for environmental quality, selection of statistical methods that can be applied to generate the required information, including requests for that data; comparison of the requested information and information obtained through monitoring program). Design monitoring network (selection a location for sampling, determining parameters of interest, and sampling frequency). Procedures for data collection (methods and procedures of field sampling, selection methods for laboratory analysis). Quality control of sampling and analysis. Procedures for the implementation and dissemination of information (application of software data analysis, frequency and format of data reporting). <i>Practice</i> Field sampling (surface water, sediment, ground water and wastewater). Quality control within environmental monitoring program (from the preparation of equipment and laboratory equipment to sampling, transport and storage of samples). Environmental monitoring - examples from practice. Information systems in water monitoring.		
<b>Required Reading:</b> 1. F.R. Burden, D. Donnert, T. Godish, I. Mckelvin, Environmental Monitoring Handbook, McGraw-Hill, 2004. 2. P. Vanrolleghem, Modelling Aspects of Water Framework Directive Implementation, IWA Publishing, 2010. 3. C. Gonzales, P. Quevauviller, R. Greenwood, Rapid Chemical and Biological Techniques for Water Monitoring, John Wiley & Sons Ltd., 2009. 4. Reference Document on the General Principles of Monitoring, European Commission, 2017.		
<b>Weekly Contact Hours:</b> 6	<b>Lectures:</b> 3	<b>Practical work:</b> 2

<b>Teaching Methods:</b> Lectures, laboratory work			
<b>Knowledge Assessment (maximum of 100 points):</b> 100			
<b>Pre-exam obligations</b>	points	<b>Final exam</b>	points
Active class participation	5	Written exam	40
Practical work	15	Oral exam	20
Preliminary exam(s)	20		