

Study Programme: Environmental Engineering
Course Unit Title: Environmental Monitoring
Course Unit Code: ZN204
Name of Lecturer(s): Associate Professor Bogdana Vujić, PhD
Type and Level of Studies: Bachelor Academic Degree
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: None
Course Aims: The objective of the course is to provide the necessary knowledge about the basic principles of the environmental monitoring functioning and physical-chemical processes in different media of the environment, in order to determine representative pollutants.
Learning Outcomes: Students gain the necessary practical and theoretical knowledge that enables them, using classical chemical and instrumental methods, to identify and quantify pollutants as well as sources of pollution in different environment medium.
Syllabus: <i>Theory</i> Definition of the Eco-management system; Global, local and communal pollution and impact on ecosystems and health of people; Monitoring of the same location or the same product in longer period; Pollution indicators (physical, chemical, biological); Environmental risks; Recommended norms of protection in work and communal areas; Environmental legislation; Monitoring of the emission, pollution dispersion in air, water and soil; Maximum permissible concentrations and dosage of harmful substances; Environmental standards and protection measures; Monitoring of ambient air quality (SO ₂ ,NO _x ,CO,PM, waste etc); Monitoring of water quality; Monitoring of efficiency of the wastewater treatment; Monitoring of soil pollution and efficiency in its remediation; Healthcare monitoring; Non-ionizing and ionizing radiation; Qualitative analysis in biomonitoring; Bioindicators for the examination of human health and exposure of ecosystems; Bioindicators in environmental monitoring program. <i>Practice</i> Standard methods in environmental monitoring; Instrumental methods in environmental monitoring; Calibration of instruments; Determination of pH and conductivity of water; Sampling of air and water; Determination of suspended material; Determination of organic material content; Measurement of COD and BOD; Spectrophotometric methods in monitoring;
Required Reading: 1. Andrew G. Clarke, Industrial Air Pollution Monitoring, Chapman & Hall, 1998. 2. Nicholas P. Cheremisinoff, PhD, N&P Limited, Handbook of Air Pollution Prevention and Control, Elsevier Science (USA) 2002 3. Božo Dalmacija, Upravljanje kvalitetom voda sa aspekta Okvirne direktive EU o vodama, PMF Novi Sad, Departman za hemiju, Mala knjiga, 2003.

4. Vujić G., Đogo, M. Monitoring životne sredine - vežbe Skripta, interna skripta FTN 2012.
5. G.Bruce Wiersma, Environmental Monitoring, CRC Press LLC, 2004
6. Marco Ragazzi, Air Quality, Monitoring, Measuring and Modeling Environmental Hazards, Apple Academic Press, 2017.

Weekly Contact Hours: 4	Lectures: 2	Practical work: 2
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Teaching Methods:

Lectures and students group work

Knowledge Assessment (maximum of 100 points):

Pre-exam obligations	points	Final exam	points
Active class participation	7	referat	50
Practical work	8	oral exam	20
Preliminary exam(s)	15		