"ENVIRONMENTAL MONITORING" SYLLABUS

Basic data of the subject	
Academic Unit:	**Faculty of Life and Environmental Sciences**
Course title:	**Environmental monitoring**
Program:	**Forest and Environmental Sciences**
Level:	**Bachelor**
Course status:	**Selective**
Study year:	**First year, second semester**
Number of hours per week:	**2+1**
Credit value – ECTS:	**3**
Time / location:	**To be announced**
Lecturer:	**Prof. Asoc. Dr. Albana Plakiqi Milaimi**
Contact details:	**Tel: +383/44 187 368** **E-mail:** albana.milaimi@umi-prizren.com
Course description:	At the beginning of this course will be describe the **s**tandard physic-chemical methods for the examination of environmental samples contamination (theory and practice). Then, will be analyzed the levels of environmental contamination and legislation. Will be continue with the basics of toxicology and genotoxicology. Will be explain the advantages of Comparative biological methods for monitoring environmental contamination, with the special emphasis water, soil and air contamination. We will explain the basic principles in the development and application of biomonitoring methods; Role of biotechnology, microbiology and genetic engineering in the development and introduction of new biomonitoring methods. Groups and required characteristics of test organisms in biomonitoring methods. Then, we will continue with the evaluation and interpretation of results of environmental monitoring and environmental risk assessment. The last chapter of this course will be the introduction of possibilities for the new biotechnology SMEs in the field of environmental monitoring.
Course objectives:	The main objective of this course is that students are provided the knowledge to physical, chemical and biological methods in the environmental monitoring, in order to assess the level of environmental pollution, the measures to be taken to reduce pollution and the implementation of standards for the release of pollutants using new technologies in environmental control.
Learning outcomes:	Upon completion of this course, students will be able: 1. To know the sources of air, water and soil pollution. 2. To know the permissible pollution level standards. 3. To describe the technical measures and methods used for the identification and dosing of pollutants. 4. To analyze the role of biological indicators in assessing the state of the living environment. 5. To assess the state of the living environment in Kosovo. 6. Apply the acquired knowledge in practice.
Contribution on student load (must correspond with learning outcomes)	

Activity	Hours	Days/week	Total
Lectures	2	15	30
Exercise theoretical/laboratory	1	20	20
Practice work			
Contact with lecturer/consultations	2/semester	-	2
Field exercises			
Mid-terms, seminars	2/semester	-	2
Homework			
Individual time spent studying (at the library or home)	1	15	15
Final preparation for the exam	2/semester	-	2
Time spent in evaluation (tests, quiz, final exam)	2/semester	-	2
Projects, presentations, etc.	2/semester	-	2
Total			75 hours
Teaching methods :	Lecture, discussions, laboratory exercises, environmental exercises work, consultations, seminars, individual research and teaching, partial exam, final exam.		
Evaluation methods:	Final rating represents the sum of: First evaluation: 20%, Second evaluation: 20%, Laboratory activities: 10%, seminars and other activities: 10 %, Regular attendance: 5%, Final exam: 30%. Total 100%.		
Literature			
Basic Literature:	1. Kasum Letaj, Albana Milaimi 2018. Monitorimi mjedisor. Skriptë me përmbjedhje ligjëratash. 2. Aleko Miho: Monitorimi biologjik Mjedisor. Tiranë. 2011.		
Additional Literature:	3. Dervish Rozhaja & M. Jablanovic: Pollution and Protection of environment. Prishtinë, 1980. 4. Environmental monitoring. 2004. (Ed.: Wiersma B. G.) Lewis Publishers is an imprint of CRC Press LLC. Florida, USA. 5. Environmental Science: A Global Concern. 2014. William Cunningham and Mary Cunningham. McGraw-Hill Education; 13 editions. 6. Erleta Kryeziu, Albana Milaimi (2020). Montoring of environmental pollution with heavy metals in the woods of Drenas forests. Diploma Thesis, Universiteti Ukshin Hoti" Prizren. 7. Albana Plakiqi Milaimi, Qerim I. Selimi, Kasum Rr.Letaj, Artan Trebicka. (2015). Lead Effect on Aminolevulinic Acid Dehydratase Acti.ity of Feral Pigeon (Columba livia) in Drenas. Journal of Chemical Health Risks 5(4), 245–250. http://www.jchr.org/article_544113.html; DOI: 10.22034/JCHR.2015.544113		

	8. Albana Plakiqi Milaimi, Qerim Selimi, Kasum Letaj, Artan Trebicka, Astrit Milaimi.((2016) Accumulation of Heavy Metals in Feral Pigeons Living Near a Ferronickel Smelter. Pol. J. Environ. Stud. Vol. 25, No. 6, 1-5. Impact factor. http://www.pjoes.com/Accumulation-of- Heavy-Metals-in-Feral-Pigeons-nLiving-Near-aFerronickel-Smelter,63425,0,2.html;DOI: https://doi.org/10.15244/pjoes/63425 9. Leonora Çarkaj, Qerim Selimi2, Murtezan Ismaili & Albana Plakiqi Milaimi*. Monitoring of environmental pollution by heavy metal through the Roman snail (Helix pomatia) in Mitrovica-Kosovo. Carpathian Journal of Earth and Environmental Sciences, 2021, Vol. 16, No. 2, p.463 – 468; http://www.cjees.ro/viewTopic.php?topicId=919; DOI:10.26471/cjees/2021/016/191, Corresponding author. 10. Leonora Çarkaj1, Qerim Selimi2, Murtezan Ismaili1 , Albana Plakiqi Milaimi3* Roman Snail (Helix pomatia L.) as Bioindicator of Heavy Metals Pollution in Mitrovica Town, Kosovo. Ecological Engineering & Environmental Technology 2022, 23(3), 64–71. DOI: https://doi.org/10.12912/27197050/147149, Corresponding author.

Designed study plan:		
Week	**Lectures**	**Exercises**
First week:	Environmental monitoring , the importance and objectives.	Monitoring of water through the determination of physical parameters
Second week:	The environmental monitoring areas.	Monitoring of water through the determination of chemical parameters
Third week:	Indicators of environmental pollution.	Monitoring of polluted water through the presence of invertebrata
Fourth week:	The types and effectiveness of environmental monitoring.	Monitoring of polluted water through the Nostoc algae
Fifth week:	Bilogical monitoring; Types of biological monitoring – bioevidence and biosurvey	Monitoring of polluted water through the chlorophyta. Palmer Index of organic pollution
Sixth week:	Indicator organisms; Biosensors (biomarkers)	Air monitoring through the plant indicators
Seventh week:	The evaluation of biological of environment quality **First intermediary assessment**	The pesticides effects in the biochemical parameters of blood plasma in the animal organisms.

Eighth week:	Ecosystems and habitates; ; Biological integrity; The importance of paleoecological data during the biological monitoring.	Effect of toxicants in the prothein synthesis; determination of total proteins
Ninth week:	The evaluation of environment pollution through the bioaccumulation; Monitoring of biodiversity; Presentation of the data, the errors and biological importance of environmental assessment.	Heavy metals bioaccumulation in the target organs.
Tenth week:	Bioindikators; Bioaccumulation	The effects of heavy metals in the activity of oxidative stress enzymes
Eleventh week:	Bioindicators classification A.) Bioindicators of biological diversity (biodiversity). B.) Status of abiotic indicators	Activity of alanine and aspartate activity in the blood plasma
Twelfth week:	Bioindicators of environment status; Bioindicators of water ambients	Monitoring of environment pollution through the hematological parameters
Thirteenth week:	Biomarkers	The effect of lead in the tissues histology
Fourteenth week:	The basics of genetic monitoring; Genetic variability. Suitability and types of adaptatio.	Analyses and data intertpretation
Fifteenth week:	Mutagens and carcinogens **Second intermediary assessment**	Monitoring of morphometric parameters.
Academic policies and rules of conduct:		
Regular and active participation of students in lectures, exercises (practical part) and seminar work. Keeping the peace in learning, the disconnection of mobile phones, entry hall time learning etc.		