



COURSE SYLLABUS «Environmental Monitoring»

Degree of higher education - Bachelor
Specialization 101 Ecology
Educational programme «Ecology»
Academic year 3, semester 5
Form of study full-time
Number of ECTS credits 4
Language of instruction English

Lecturer of the course
Contact information of the lecturer (e-mail)
Course page on eLearn

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COURSE DESCRIPTION (up to 1000 printed characters)

The discipline “Environmental monitoring” is a standard professionally-oriented discipline for students of EL “Bachelor” with direction 101 Ecology. The main objective of the discipline is formation the theoretical knowledge and practical skills in the field of environmental monitoring, in particular on the modern problems of different components of the environment (surface and ground water, oceans and seas, atmospheric air, soils etc.), estimation of impact of anthropogenic stresses on them, prediction of changes in the state of environment as well as working out the scientifically-grounded recommendations for realization of nature protection measures.

Competencies of the educational programme:

Integrative competency (IC):

Ability to solve complex specialized problems and solve practical problems in the field of ecology, environmental protection environment and balanced environmental management, which involves the application of basic theories and methods of environmental sciences, characterized by complexity and uncertainty of conditions.

General competencies (GC):

GC2. Skills in the use of information and communication technologies.

GC6. Ability to communicate with representatives of other professional groups of different levels (with experts from other fields of knowledge/economic activities).

Professional (special) competencies (PC):

PC7. Ability to conduct environmental monitoring and assess the current state of the environment.

PC10. Ability to use modern information resources for environmental research.

PC13. Ability to contribute to the management of environmental actions and/or environmental projects.

Program learning outcomes (PLO) of the educational programme:

PLO5. To know the conceptual basis of monitoring and rationing of anthropogenic load on the environment.

PLO10. Be able to apply software tools, GIS technologies and Internet resources for information support of environmental studies.

PLO15. Be able to explain the social, economic and political implications of implementing environmental projects.

COURSE STRUCTURE

Topic	Hours (lecture/laboratory, practical, seminar)	Learning outcomes	Tasks	Assessment
Semester 1				
Module 1				
Topic 1 Basic concepts of environmental monitoring	4/-	Understand methods of grounding the net of observation of the components of biosphere; Be able to ground the choice of methods and places of observation for the state of environment; Be able to search for information using appropriate sources to make informed decisions	Submitting laboratory work Completing independent work (including in eLearn)	5
Definitions and historical background of monitoring. Classification of monitoring system	-/4			
Topic 2 The State Environmental Monitoring System of Ukraine	4/-	Have a knowledge about subjects, tasks and scheme of national monitoring system; Understand normative basis of national environmental monitoring system; Understand the basic environmental laws, rules and principles of environmental protection and nature management.	Submitting laboratory work Completing independent work (including in eLearn)	10
Regulatory and policy framework of SEMS	-/4			
Topic 3. Air pollution and air monitoring	4/-	Know programs of observation of the pollution sources and level of pollution; Demonstrate an understanding of the basic principles of environmental management and/or environmental projects.	Submitting laboratory work Completing independent work (including in eLearn)	10
Analytical research methods of air condition	-/4			
Topic 4. Monitoring of surface water	4/-	Solve problems in the field of environmental protection using generally accepted	Submitting laboratory work Completing independent work (including in	10
Physical and chemical	-/4			

parameters of water quality monitoring		and / or standard approaches and international and national experience. Know programs of observation of the water pollution sources and level of pollution;	eLearn)	
Module 2				
Topic 5. Land and soil monitoring. Assessment of land degradation	4/-	Be able to predict the impact of technological processes and industries on the environment; Solve problems in the field of environmental protection using generally accepted and/or standard approaches and international and national experience.	Submitting laboratory work Completing independent work (including in eLearn)	10
Agroecological monitoring. Methods for determining the contaminant concentration in soils	-/4			
Topic 6. Climate change and climate monitoring	4/-	Be able to delate the results of activities to community of professionals and public in general, make presentations and messages. Demonstrate skills in assessing unforeseen environmental problems and thoughtful choice of ways to solve them.	Submitting laboratory work Completing independent work (including in eLearn)	10
Characteristics and uses of climate observations at the global and national levels	-/4			
Topic 7. Monitoring of biodiversity (Biomonitoring)	4/-	Know the conceptual basis of monitoring and regulation of anthropogenic pressure on the environment and biodiversity. Be able to predict the impact of technological processes and industries on the biota.	Submitting laboratory work Completing independent work (including in eLearn)	10
International approaches to biomonitoring. Indicators used to conduct monitoring biodiversity at the global and national levels	-/4			
Topic 8. Global approaches for environmental monitoring	2/-	Be able to ground the choice of methods and places of observation for the	Submitting laboratory work Completing independent work	5

World experience in organizing environmental monitoring systems	-/2	state of environment; Use modern methods of analysis and prediction the state of environment; Develop scientifically-grounded recommendations for supporting of managerial decisions in the field of environmental protection.	(including in eLearn)	
Total for 1 semester				70
Exam				30
Total for course				100

ASSESSMENT POLICY

<i>Policy regarding deadlines and resits:</i>	Assignments submitted after the deadline without valid reasons will be graded lower. Resitting of modules will be allowed with the permission from the lecturer and in the presence of valid reasons (e.g. medical reasons).
<i>Academic honesty policy:</i>	Cheating during tests and exams is strictly prohibited (including the use of mobile devices). Coursework and research papers must contain correct citations for all sources used.
<i>Attendance policy:</i>	Class attendance is mandatory. In case of objective reasons (such as illness or international internships), individual learning may be allowed (in online format by the approval of the dean of the faculty).

SCALE OF ASSESSMENT OF STUDENT KNOWLEDGE

Student rating, points	National grade based on exam results	
	exams	credits
90-100	excellent	passed
74-89	good	
60-73	satisfactory	
0-59	unsatisfactory	not passed

RECOMMENDED SOURCES OF INFORMATION

1. European Environment Agency: <http://www.eea.europa.eu/>
2. Information and analytical data base “Environmental passport of the regions of Ukraine”: <http://ukrecopass.org.ua/>
3. Bulletin “State of Ground Waters of Ukraine”: <http://www.geoinf.kiev.ua/>
4. Bulletin “Annual Bulletin on the State of Rivers of Ukraine”: <http://www.cgo.kiev.ua/>
5. Climatic cadastral register of Ukraine: <http://www.cgo.kiev.ua/>
6. World Data Center for Geoinformatics and Sustainable Development: <http://wdc.org.ua/en/services/ukraine-sd>
7. ЕкоСистема, національна онлайн-платформа, яка містить актуальну інформацію про стан довкілля: <https://eco.gov.ua/>

8. Міністерство захисту довкілля та природних ресурсів України:
<https://data.gov.ua/organization/ministerstvo-ekolohiyi-ta-pryrodnykh-resursiv-ukrayiny>
9. Державне агентство водних ресурсів України:
<https://data.gov.ua/organization/derzhavne-ahentstvo-vodnykh-resursiv-ukrayiny>
10. Веб-сайт ГО «Екодія»: <https://ecoaction.org.ua/>
11. Copernicus, the Earth observation component of the European Union's Space programme: <https://www.copernicus.eu/en>