



SYLLABUS OF AN ACADEMIC DISCIPLINE Environmental Monitoring

Academic degree - Bachelor's
Specialty 101 Ecology
Academic programme «Ecology»
Year of study 3, semester 5
Form of study full-time
Number of ECTS credits 5
Language of instruction English

Lecturer of the discipline
Lecturer's contact
information (e-mail)
URL of the e-learning
course on the NULES e-
learning portal

docent Rakoid O.O., PhD on agrarian sciences

orakoid@nubip.edu.ua

<https://elearn.nubip.edu.ua/enrol/index.php?id=2246>

ACADEMIC DISCIPLINE DESCRIPTION

(up to 1000 symbols)

Aim of discipline is to expand the object, methods and place of the discipline "Environmental monitoring" in the system of environmental knowledge as well as highlight its main principles; to introduce the main sections of the discipline; to promote ecological outlook for future environmentalists.

Objectives 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.

Competences of the discipline:

Integral competence (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):

GC02. Skills in the use of information and communication technologies.

GC06. Ability to communicate with representatives of other professional groups of different levels (with experts from other fields of knowledge/economic activities).

Special (professional) competences (SC):

SC07. Ability to conduct environmental monitoring and environmental assessment.

SC10. Ability to use modern information resources for environmental research.

SC13. Ability to participate in the management of environmental actions and/or environmental projects.

Professional (special) competencies (PC):

PC07. Ability to conduct environmental monitoring and environmental assessment.

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

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

Expected Learning Outcomes (ELO):

ELO5. To know the conceptual basis of environmental monitoring and rationing of anthropogenic pressure on the environment.

ELO10. Be able to apply software tools, GIS technologies and Internet resources for information support of environmental studies.

ELO15. Be able to explain the social, economic, and political consequences of implementing environmental projects.

ACADEMIC DISCIPLINE STRUCTURE

Topic	Hours (lectures/laboratory, practical, seminars)	Learning outcomes	Tasks	Assessment
1 Semester				
Module 1				
Topic 1 Basic concepts of environmental monitoring	3/-	To be able to ground the choice of methods and places of observation for the state of environment; To be able to search for information using appropriate sources to make informed decisions	Submitting practical work Completing independent work (including in eLearn)	10
Definitions and historical background of monitoring. Classification of monitoring system	-/3			
Topic 2 Classification of the monitoring system. environmental indicators	3/-	To get acquainted with generally accepted classifications of monitoring systems. To master the concept of environmental indicators. To expand knowledge about the methodology and system of monitoring indicators of the European Union.	Submitting practical work Completing independent work (including in eLearn)	10
The systems of global environmental indicators	-/3			
Topic 3 The Global environmental monitoring system	3/-	To learn more about the organisation and functioning of the Global Environment Monitoring System. To understand methods of grounding the net of observation of the components of biosphere.	Submitting practical work Completing independent work (including in eLearn)	10
The food quality indicators in the GEMS/Food system	-/3			
Topic 4 The State Environmental Monitoring System of Ukraine	3/-	To have a knowledge about subjects, tasks and scheme of national monitoring system; To understand	Submitting practical work Completing independent work (including in eLearn)	10

Regulatory and policy framework of SEMS	-/3	normative basis of national environmental monitoring system; To understand the basic environmental laws, rules and principles of environmental protection and nature management.		
Topic 5 Common approaches to monitoring. information support for environmental monitoring	3/-	To be able to ground the choice of methods and places of observation for the state of environment. To use modern methods of analysis and prediction the state of environment.	Submitting practical work Completing independent work (including in eLearn)	10
General techniques of environmental monitoring	-/3	To develop scientifically grounded recommendations for supporting of managerial decisions in the field of environmental protection.		
Module 2				
Topic 6. Air pollution and air monitoring	3/-	To know programs of observation of the pollution sources and level of pollution.	Submitting practical work Completing independent work (including in eLearn)	10
Analytical research methods of air condition	-/3	To demonstrate an understanding of the basic principles of environmental management and/or environmental projects.		
Topic 7. Monitoring of surface water	3/-	To solve problems in the field of environmental protection using generally accepted and / or standard approaches and international and national experience. To know programs of observation of the water pollution sources and level of pollution.	Submitting practical work Completing independent work (including in eLearn)	10
Physical and chemical parameters of water quality monitoring	-/3			

Topic 8. Land and soil monitoring. Assessment of land degradation	3/-	To be able to predict the impact of technological processes and industries on the environment.	Submitting practical work Completing independent work (including in eLearn)	10
Agroecological monitoring. Methods for determining the contaminant concentration in soils	-/3	To solve problems in the field of environmental protection using generally accepted and/or standard approaches and international and national experience		
Topic 9. Monitoring of biodiversity (Biomonitoring)	3/-	To know the conceptual basis of monitoring and regulation of anthropogenic pressure on the environment and biodiversity.	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	-/3	To be able to predict the impact of technological processes and industries on the biota.		
Topic 10. Special types of environmental monitoring	3/-	To be able to delate the results of activities to community of professionals and public in general, make presentations and messages.	Submitting laboratory work Completing independent work (including in eLearn)	10
Characteristics and uses of climate observations at the global and national levels	-/3	To demonstrate skills in assessing unforeseen environmental problems and thoughtful choice of ways to solve them.		
Total for 1st semester				70
Examination				30
Total for the course				100

ASSESSMENT POLICY

<i>Deadlines and exam retaking policy:</i>	Works that are submitted late without valid reasons will be assessed with a lower grade. Module tests may be retaken with the permission of the lecturer if there are valid reasons (e.g., a sick leave).
---	---

Academic integrity policy:	Cheating during tests and exams is prohibited (including using mobile devices). Term papers and essays must have correct references to the literature used
Attendance policy:	Attendance is compulsory. For good reasons (e.g., illness, international internship), training can take place individually (online by the faculty dean's consent)

SCALE FOR ASSESSING STUDENTS 'KNOWLEDGE AND SKILLS

Student's rating, points	National grading of exams and credits	
	exams	credits
90-100	excellent	pass
74-89	good	
60-73	satisfactorily	
0-59	unsatisfactorily	fail

RECOMMENDED SOURCES OF INFORMATION

1. Electronic educational course of the educational discipline "Environmental Monitoring": <https://elearn.nubip.edu.ua/course/view.php?id=2246>
2. Regulations on the state environmental monitoring system. Approved by Resolution No. 391 of the Cabinet of Ministers of Ukraine dated March 30, 1998.
3. Resolution of the CMU dated December 5, 2007 No. 1376 (With changes introduced in accordance with the Resolution of the CMU dated 17.08.2011 No. 880 (880-2011-p)) On the approval of the State target environmental program for environmental monitoring.
4. Resolution of the CMU of December 31, 2004 No. 992. "On the approval of the Concept of the State Program for Environmental Monitoring".
5. On the approval of the Regulation on land monitoring. Resolution of the CMU of August 20, 1993 No. 661.
6. Some issues of state monitoring in the field of atmospheric air protection. Resolution of the CMU dated August 14, 2019 No. 827.
7. On the approval of the Procedure for State Water Monitoring. Resolution of the CMU of September 19, 2018 No. 758.
8. Rakoid O.O., Bogoliubov V.M. Environmental monitoring. Study guide. – Kyiv: NUBIP, 2019. – 301
13. Environmental monitoring: a textbook / [Bogolyubov V.M., Klymenko M.O., Mokin V.B. and others]; under the editorship Prof. V.M. Bogolyubov View. 2nd, revised and additional - Kyiv: NUBiPU, 2018. 435 p.
14. Klepko A.V., Rakoid O.O. Methodical Guidelines for coursework on the discipline "Environmental Monitoring" for students of the educational degree "Bachelor" with specialization 101 Ecology. Kyiv: NUBIP, 2024. 44
15. Rakoid O.O., Bogoliubov V.M., Klepko A.V., Bondar V.I. Environmental monitoring. Textbook. Kyiv: NUBIP, 2023. 332 p.

Internet sources

1. European Environment Agency: <http://www.eea.europa.eu/>
2. Національний портал відкритих даних: <http://data.gov.ua>
3. Громадський моніторинг стану якості повітря: <https://eco-city.org.ua/>
4. Програма Європейського Союзу Copernicus: <https://www.copernicus.eu/en>

5. Інтерактивна карта "Чиста вода":
https://texty.org.ua/articles/86343/Chysta_voda_Interaktyvna_karta_rozpovist_pro_stan-86343/
6. Єдина екологічна платформа "ЕкоСистема": <https://eco.gov.ua/>
7. Офіційний сайт Міністерства захисту довкілля та природних ресурсів України:
<http://www.menr.gov.ua>
8. ЕкоЗагроза (офіційний вебресурс і мобільний додаток Міндовкілля, завдяки якому можна дізнатись достовірну інформацію про стан повітря, води, ґрунту та інші дані)
<https://ecozagroza.gov.ua/>