to the Order of March 23, 2023 № 244

NATIONAL UNIVERSITY OF LIFE AND ENVIRONMENTAL SCIENCES OF UKRAINE
Faculty of Plant Protection, Biotechnology and Ecology

"CONFIRMED"
Dean of the Faculty
of Plant Protection, Biotechnology and Ecology
Kolomiets Y.V.
"01" 06 2023p.

"APPROVED"
at the meeting of the department of
Agrosphere Ecology and Environmental Control
Protocol №5 dated "03" 05 2023 p.
Head of Department
Naumovska O.I.

"REVIEWED"
Program Coordinator ~~OP~~ 101 Ecology
Bogolubov V.M.

PROGRAM OF THE COURSE
Environmental safety

Specialization 101 "Ecology"
Educational program "Ecology"
Faculty Plant Protection, Biotechnology and Ecology

Developers: Ass. Professor, Candidate of Biology Sciences **Rubezhniak Iryna**

Kyiv – 2023 p.

1. Description of the course “Environmental safety”

Field of knowledge, specialization, educational program, educational degree		
Educational degree	Bachelor's	
Specialization	101-Ecology	
Educational degree	Ecology	
Characteristics of the course		
Type	Compulsory/elective	
Total number of hours	120	
Number of ECTS credits	4	
Number of content modules	2	
Course project (work) (if applicable)		
Form of assessment	Exam	
Indicators of the course for full-time and part-time forms of study		
	Full-time form of study	Part-time form of study
Course (year of study)	2	
Semester	4	
Lecture classes	15 hr.	
Practical, seminar classes	30 hr.	
Laboratory classes		
Self-study	60 hr.	
Individual assignments		
Number of weekly classroom hours for the full-time form of study	4 hr.	

2. Goal of the course and task

Aim The excessive anthropogenic pressure on the environment has led in a large measure to the present crisis in terms of the environmental safety of Ukraine. First of all, this pressure affects the regions with a developed industry. The industrial regions are areas with an extremely high risk of anthropogenic accidents and catastrophes.

Tasks Ecological risk is constantly increasing by reason of obsolete equipment and a low technological level. In educational course "Ecological safety" will be studied questions how to define and predict environmental threats, disaster and how to manage emergency situations.

After studying of this course students should

to know:

- Theoretical principles and methodological basics of environmental security.
- Tasks of modern science about rational management of nature, and their methods, problems and perspectives.
- Optimization of management of nature in consideration of basic ecological laws on environmental security.
- Normatively-legislative basics of security
- Conception of sustainable development of society.

To be able:

- to use principles, forms and methods of environment security.
- to foresee of consequences of destructive unconsidered economical activities of human on environment.
- to take optimal technical, technological and designed decisions, which directed on increasing of ecological safety.
- to plan, conduct and report environment security preparedness action.
- to introduce of innovation in environmental management and state policy to decrease risks.
- to determine of ecological aspects of enterprises activity on the state scale and priorities, to develop the programmers of ecological actions.

General competencies (GC) _____

K01. Knowledge and understanding of the subject area and professional activity

K07. The ability to act socially responsibly and consciously

K08. Ability to conduct research at an appropriate level

Professional (special) competencies (PC):_____

K18. Ability to assess the impact of technogenesis processes on the state of the environment and identify environmental risks associated with production activities.

K26. Ability to participate in the management of environmental actions and/or environmental projects.

3. Program discipline

Module and themes	Hours					
	Stationary form					
	Total number	Including				
		Lect.	Pract.	Lab.	Indiv.	Self-train
1	2	3	4	5	6	7
Module 1. Definition of safety						
Theme 1. Characteristic of environmental security	18	1	5			11
Theme 2. Natural factors of the emergence of dangerous processes	18	1	5			11
Theme 3. Anthropogenic factors of the emergence of dangerous processes	18	1	5			11
Total number of module 1	54	2	15			33
Module 2. Categories of risk						
Theme 1. Conception and methodology of risk identification	21	3	3			12
Theme 2. Management of environmental risks	20	3	3			11
Theme 3. State system of management of environmental security	20	3	3			11
Theme 4. Risk management	19	2	3			12
Theme 5. Abnormally dangerous ecological situation	16	1	3			11
Total number of module 2	96	12	15			57
Total number	150	15	30			90

4. SELF-TRAINING THEMES

№	Name of theme	Hours
1	State classifier of dangerous situation	11
2	Dangerous situation of differed level and kind	11
3	Estimation of risk of population mortality of Ukraine	11
4	Analysis of exogenous risk of mortality	12
5	Estimation of risk of metal pollution of agrarian landscape and urban edaphotop	11
6	Calculation of ecological safety of industrial production	11
7	Calculation of ecological safety of agriculture	12

8	Calculation of index of development of natural and anthropogenic dangerous processes in Ukraine	11
	Total	90

5. APPROXIMATE THEMES OF PRACTICALS

№	Name of theme	Hours
1	State classifier of dangerous situation.	4
2	Dangerous situation of differed level and kind	4
3	Estimation of risk of population mortality of Ukraine	4
4	Analysis of exogenous risk of mortality.	4
5	Estimation of risk of metal pollution of agrarian landscape and urban edaphotop	4
6	Calculation of ecological safety of industrial production	4
7	Calculation of index of development of natural and anthropogenic dangerous processes in Ukraine	2
8	Definitions of a condition of trees in city streets Estimation of impurity of air by means of lichens.	2
9	Estimation of degree of impurity of air the fulfilled gases on a site of the main street (behind concentration CO). Estimation of risk of metal pollution of agrarian landscape and urban edaphotop	2
	Total	30

6. Control questions

1. Classification of risk
2. Acceptable risk. Leopold matrix
3. Damage and risk. Direct and indirect damages
4. Risk Management
5. Tectonic disasters
6. Topological disasters
7. Meteorological disasters
8. Monitoring and its classification
9. Control methods of monitoring
10. Monitoring and its classification
11. Control methods of monitoring
12. Classification of anthropogenic impacts of the environment
13. Physical pollution of the environment
14. Chemical pollution of the environment
15. Chemicals That Cause Water Pollution
16. Chemical Pollution of Soil

17. Chemicals that Cause Air Pollution
18. Biological pollution and effects
19. Security. Classification of ecological security
20. Hazards and classification
21. Causes of hazards
22. Subject and object of environmental safety
23. International environmental security: climate change and greenhouse effect
24. International environmental security: Ozone Depletion. Impacts of Ozone Depletion
25. International environmental security: Land Use. Deforestation
26. International environmental security: Desertification
27. International environmental security: Hazardous Waste Disposal

7. Training method: theoretical and practical lessons, self-study

8. Form of control

exam

9. Розподіл балів, які отримують студенти

Оцінювання знань студента відбувається за 100-бальною шкалою і переводиться в національні оцінки згідно з табл. 1 «Положення про екзамени та заліки у НУБіП України» (наказ про уведення в дію від 27.12.2019 р. № 1371).

Рейтинг студента, бали	**Оцінка національна за результати складання**	
	екзаменів	**заліків**
90-100	**Відмінно**	**Зараховано**
74-89	**Добре**	
60-73	**Задовільно**	
0-59	**Незадовільно**	**Не зараховано**

Для визначення рейтингу студента (слухача) із засвоєння дисципліни **Rдис** (до 100 балів) одержаний рейтинг з атестації (до 30 балів) додається до рейтингу студента (слухача) з навчальної роботи **Rнр** (до 70 балів): **R дис** = **R нр** + **R ат**

10. METHODOLOGICAL SUPPORT

1. Environmental Protection and Management/ Marlon White (Editor).- Larsen and Keller Education, 2017.-300 p.
2. Екологічна безпека України: Навчальний посібник / М. І. Хилько. – К., 2017. -265 р.
3. Екологічна безпека: конспект лекцій/ Кузьмина В. А.- : Одеський державний екологічний університет, 2020.- 124 с.
4. Environmental safety. Lecture notes. / Rubezhniak I.- NULES,2021. - 108 p.

11. INTERNET RESOURCES

1. Institute for Environmental Security – [Internet resources]: www.envirosecurity.org
2. The Ecosystem and how it relates to Sustainability- [Internet resources]: http://www.globalchange.umich.edu/globalchange1/current/lectures/kling/ecosystem/ecosystem.html
3. Water - [Internet resources]: http://climate.org/archive/topics/water.html