

**NATIONAL UNIVERSITY OF LIFE AND ENVIRONMENTAL SCIENCES
OF UKRAINE**

Department of Agriculture and Herbology



«APPROVED»

Dean of the Agrobiological Faculty


Vitaliy KOVALENKO

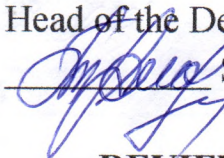
« » 2024

«APPROVED»

at the meeting of the Department of
Agriculture and Herbology

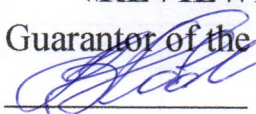
Minutes № 10 of 20.05.2024

Head of the Department


Semen TANCHYK

«REVIEWED»

Guarantor of the AP


Vitaliy KOVALENKO

CURRICULUM OF ACADEMIC DISCIPLINE

«AGRICULTURE»

Field of knowledge Agricultural sciences and food

Specialty 201 «Agronomy»

Academic program «Agronomy»

Faculty «Agrobiological»

Authors:

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Kyiv – 2024

Description of the discipline «Agriculture»

Academic degree, specialty, academic program		
Academic degree	Bachelor's	
Specialty	201 «Agronomy»	
Academic program	Agronomy	
Characteristics of the discipline		
Type	Compulsory	
Total number of hours	195	
Number of ECTS credits	6,5	
Number of content modules	4	
Course project (work)	Course (work)	
Form of assessment	Exam	
Indicators of the discipline for full-time and part-time forms of university study		
	Full-time	Part-time
Year of study	2	2, 3
Semester	3, 4	3, 4, 5
Lectures	60 hr.	34 hr.
Laboratory classes	60 hr.	34 hr.
Self-study	75 hr.	-
Number of hours per week for full-time students	4 hr.	-

1. Aim, objectives, competences and expected learning outcomes of the discipline

The main aim of agriculture is the efficient use of land, preservation, and improvement of soil fertility, obtaining a stable, energetically, and economically feasible yield of agricultural crops from a unit of area. The main aim of this course is to help the future generation to improve soil fertility, agricultural productivity and yield and minimize crop losses. By considering agriculture as an applied science, students gain an understanding of factors affecting plant growth, soil fertility indicators, laws of agriculture, scientifically based crop rotations, measures, methods, and systems of soil tillage, agrotechnical requirements of agricultural crops before sowing, crop care measures, and anti-erosion measures.

Objectives of the discipline:

1. To study the importance in plant life of the main factors of the ecological environment and the laws of agriculture and their use in agricultural production.
2. To study the concept of soil fertility and its main indicators. Master the practical measures of regulation of water, air, heat, light, and nutrient regimes of soil.
3. To study the scientific bases of crop rotations and to master the methods of their design, implementation, and development.
4. To study the scientific bases of soil tillage, methods of developing a system of tillage and quality control of major field work.
5. To study modern machines and tools that are used for basic field work.
6. To study the scientific bases and agronomic measures to protect soils from erosion.
7. To study the history of the development of farming systems in Ukraine, their modern content and mastering the methodology of building a scientifically based adaptive farming system.

Acquisition of competencies:

Integral competence (IC):

Ability to solve complex specialized tasks and practical problems in agronomy, which involves the application of theories and methods of the relevant science and is characterized by complexity and compliance with zonal conditions.

General competences (GC):

GC 6. Knowledge and understanding of the subject area and understanding of professional activity.

GC 7. Ability to apply knowledge in practical situations.

Special (professional) competencies SC:

SC 1. Ability to use basic knowledge of the main divisions of agricultural science (agriculture).

SC 9. Ability to manage complex actions or projects, responsibility for decision-making in specific production conditions.

Expected learning outcomes (ELO):

LO 4. To compare and evaluate modern scientific and technical achievements in the field of agronomy.

LO 6. Demonstrate knowledge and understanding of fundamental disciplines to the extent necessary to possess relevant skills in the field of agronomy.

LO 9. To possess at the operational level, the methods of observation, description, identification, classification, as well as the cultivation of objects and maintaining the stability of agrocenoses with the preservation of natural diversity.

LO 10. Analyze and integrate knowledge from general and special professional training to the extent necessary for specialized professional work in the field of agronomy.

LO 13. Design and organize activities for the cultivation of high-quality agricultural products and in accordance with current requirements.

LO 14. Integrate and improve the production processes of growing agricultural products in accordance with current requirements.

LO 15. To plan economically profitable production of agricultural products.

2. Program and structure of the course for

- full-time (part-time) form of study;
- reduced full-time (part-time) form of study.

Names of content modules and topics	Number of hours										
	Full-time form						Part-time form				
	weeks	total	including				total	including			
			1	lab	ind	self		1	lab	ind	self
1	2	3	4	5	6	7	8	9	10	11	12
Content Module one. Scientific bases of agriculture											
Topic 1. Agriculture – food, energy, and environmental safety of Ukraine	1	7	2	-	-	5	2	2	-	-	-
Topic 2. Scientific bases of agriculture.	2–4	11	6	-	-	5	2	2	-	-	-
Topic 3. Factors affecting plant growth and laws of agriculture	5–7	30	6	14	-	10	6	2	4	-	-
Topic 4. Living conditions of agricultural plants and methods of their regulation	8–10	30	6	14	-	10	6	2	4	-	-
Total for content module one	10	78	20	28	-	30	16	8	8	-	-
Content Module two. Scientific bases of crop rotations											
Topic 1. Scientific bases of crop rotations	11–12	9	4	-	-	5	2	2	-	-	-
Topic 2. Placement of major field crops and fallow field in crop rotation	13–15	33	6	17	-	10	8	4	4	-	-
Total for content module two	5	42	10	17	-	15	10	6	4	-	-
Content Module three. Design, introduction, and development of crop rotations											
Topic 1. Classification of crop rotations	1	2	2	-	-	-	2	2	-	-	-
Topic 2. Design, introduction, and development of crop rotations	2	10	2	3	-	5	10	2	8	-	-

Total for content module three	2	12	4	3	-	5	12	4	8	-	-
Content Module four. Soil tillage. Basics of farming systems											
Topic 1. Theoretical foundations of tillage	3	2	2	-	-	-	2	2	-	-	-
Topic 2. Technological operations (processes) in tillage	4	2	2	-	-	-	2	2	-	-	-
Topic 3. Measures (techniques) of tillage	5	2	2	-	-	-	2	2	-	-	-
Topic 4. Tillage systems	6	2	2	-	-	-	2	2	-	-	-
Topic 5. The system of primary tillage	7–8	13	4	4	-	5	6	2	4	-	-
Topic 6. The system of pre-sowing tillage for spring crops	9–10	13	4	4	-	5	6	2	4	-	-
Topic 7. The system of post-sowing tillage	11–12	13	4	4	-	5	6	2	4	-	-
Topic 8. Minimization of tillage	13	7	2	-	-	5	2	2	-	-	-
Topic 9. Conservation tillage	14	7	2	-	-	5	-	-	-	-	-
Topic 10. Concepts of agricultural systems, their development and current state	15	2	2	-	-	-	-	-	-	-	-
Total for content module four	13	63	26	12	-	25	30	16	12	-	-
Course project (work) on the topic: "Agroeconomic substantiation and design of the crop rotation system on the farm"	-	1			1					1	
Total hours	30	195	60	60	1	75	68	34	34	1	

3. Topics of laboratory classes

№	Topics title	Hours
1	Determination the structure of the treated soil layer by the method of saturation in cylinders. Determination of bulk density of soil.	4
2	Determination of soil penetration resistance	4
3	Determination of soil viscosity by the method of MO Kaczynski	4
4	Determination of soil plasticity, particle size distribution and soil consistency by the Atterberg method	4
5	Determination of soil aggregation according to Savvinov (dry sieving) and water-stable aggregates (wet sieving)	4
6	Determination of soil moisture, total moisture supply and its productive part	4
7	Determination of soil water permeability	4
8	Methods of crop rotation design. Drawing up a crop rotation scheme	5
9	Characteristics of the Polissya zone. Polissya crop rotations.	4
10	Characteristics of the Forest-Steppe zone. Forest-steppe crop rotations.	4
11	Characteristics of the Steppe zone. Steppe crop rotations.	4
12	Drawing up a plan for the development of crop rotations	3

13	Development of a system of primary tillage in crop rotation	4
14	Development of a system of pre-sowing tillage in crop rotation	4
15	Development of a system of post-sowing tillage in crop rotation	4

4. Topics for self-study

№	Topics title	Hours
1	The Origins of Agriculture	5
2	Use of agricultural laws in modern agriculture	10
3	Methods of determining air and thermal properties of soil	10
4	Contribution of Ukrainian and foreign scientists to the development of crop rotation	10
5	Characteristics of soil and climatic zones of Ukraine	10
6	Special soil-protecting crop rotations and crop rotations on irrigated and drained lands	6
7	Quality control of the primary tillage	4
8	Quality control of the pre-sowing tillage	4
9	Quality control of the post-sowing tillage	4
10	Soil erosion accounting methods	4
11	Conservation tillage	4

5. Tools for assessing expected learning outcomes:

- exam;
- credit;
- module tests;
- abstracts;
- presentation of laboratory works.

6. Teaching methods:

- verbal method (lecture, discussion, interview, etc.);
- practical method (laboratory, practical classes);
- visual method (illustration, demonstration);
- processing learning resources (note-taking, summarising, reviewing, writing an abstract);
- video method (remote, multimedia, web-based, etc.);
- self-study (completing assignments).

7. Assessment methods:

- exam;
- credit;
- oral or written assessment;
- module tests;
- team projects;
- essays and reports;
- presentation of laboratory works;
- presentations at academic events

8. Distribution of points received by students

The assessment of students' knowledge and skills is conducted by means of a 100-point scale and is converted into national grades according to Table 1 of the current *Exam and Credit Regulations at NUBIP of Ukraine*.

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

To determine a student's rating in the discipline R_{DIS} (up to 100 points), the received assessment rating R_A (up to 30 points) is added to the academic performance rating R_{AP} (up to 70 points): $R_{DIS} = R_{AP} + R_A$.

9. Teaching and learning aids

- e-learning course of the discipline (<https://elearn.nubip.edu.ua/course/view.php?id=4666>);
- lectures and presentations (in electronic form);
- textbooks, manuals, tutorials;
- guidelines for studying a discipline by full-time and part-time students;
- internship programs of the discipline (if included in the curriculum).

10. Recommended sources of information

1. Землеробство. Навчальний посібник / Танчик С. П. та ін. Київ. : ЦП «Компринт», 2022. 350 с.
2. Центилю Л. В., Танчик С. П., Цюк О. А. Управління родючістю ґрунту за зберігаючого землеробства. Вінниця «Твори», 2021. 361 с.
3. Танчик С. П., Рожко В. М., Карпенко О. Ю. Землеробство з основами ґрунтознавства. Навчальний посібник. Київ. 2021. 442 с.
4. Танчик С. П., Примак І. Д., Літвінов Д. В., Центилю Л. В. Сівозміни: підручник. 2019. 364 с.
5. Гудзь В. П., Примак І. Д., Танчик С. П. Землеробство. К.: Центр учбової літератури, 2014. 432 с.
6. Камінський В. Ф., Літвінов Д. В., Шиліна Л. І. Агробіологічні основи короткочасних сівозмін Лісостепу. Монографія, 2019. 228 с.
7. Механічний обробіток ґрунту: історія, теорія, практика : навч. посіб. / [Примак І. Д., Косолап М. П., Войтович М. В. та ін.]. Вінниця. ТОВ «Твори», 2019. 425 с.
8. Циліорик О. І. Система мульчувального обробітку ґрунту в сівозмінах Північного Степу. Монографія. Дніпро: Новий Світ, 2019. 297 с.
9. Шевченко М. В. Наукові основи систем обробітку ґрунту в умовах нестійкого та недостатнього зволоження. Монографія. Харків, 2019. 209 с.

10. Землеробство. Терміни та визначення понять : ДСТУ 4691:2006. – [Чинний від 2006-12-11]. К. : Держспоживстандарт України, 2008. 37 с. – (Національний стандарт України).

11. Державна служба статистики України [Електронний ресурс] – Режим доступу до ресурсу: <http://www.ukrstat.gov.ua/>.

12. worldometers [Електронний ресурс] – Режим доступу до ресурсу: <https://www.worldometers.info/uk/>.

13. Інтернет-бібліотека Організації економічного співробітництва та розвитку (ОЕСР) [Електронний ресурс] – Режим доступу до ресурсу: <https://www.oecd-ilibrary.org/agriculture-and-food/data/oecd-agriculture-statistics agr-data-en>.

14. Продовольча та сільськогосподарська організація Об'єднаних націй (ФАО) [Електронний ресурс] – Режим доступу до ресурсу: <http://www.fao.org/countryprofiles/index/ru/?iso3=UKR>.