

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

Department of Plant Science



**"APPROVED"**

Dean of the Faculty

Agricultural Management

Anatoliy Ostapchuk

2024

**"APPROVED"**

at the meeting of the Department of Plant Science

Minutes № 20 of "15"05 2024

Head of the Department

Svitlana Kalenska

**"REVIEWED"**

Guarantor of the AP "Management"

Vira Butenko

**CURRICULUM OF ACADEMIC DISCIPLINE**

**SYSTEMS OF TECHNOLOGIES: CROP PRODUCTION**

Field of knowledge	<b>07 Management and administration</b>
Specialty	<b>073 "Management"</b>
Academic programme	<b>Management</b>
Faculty	<b>Agricultural Management</b>
Author(s):	<b>Bohdan Mazurenko, PhD in Agronomy, docent</b> <b>Liubov Honchar, PhD in Agronomy, docent</b>

Kyiv – 2024

**Description of the discipline**  
**SYSTEMS OF TECHNOLOGIES: CROP PRODUCTION**

<b>Academic degree, specialty, academic programme</b>		
Academic degree	bachelor's	
Specialty	073 Management	
Academic programme	Management	
<b>Characteristics of the discipline</b>		
Type	120	
Total number of hours	4	
Number of ECTS credits	3	
Number of modules	–	
Course project (work) (if any)	<i>Exam</i>	
Form of assessment	120	
<b>Indicators of the discipline for full-time and part-time forms of university study</b>		
	Full-time	Part-time
Year of study	1	
Semester	1	
Lectures	<i>30 hours</i>	<i>6 hours</i>
Practical classes and seminars	<i>hours</i>	<i>6 hours</i>
Laboratory classes	<i>30 hours</i>	<i>hours</i>
Self-study	<i>60 hours</i>	<i>108 hours</i>
Number of hours per week for full-time students	<i>4 hours</i>	

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

**Aim** is to provide knowledge on creating optimal technological (agroecological) conditions for the production of the necessary amount of high-quality plant products based on intensive photosynthesis in field crops while maintaining or increasing soil fertility.

**Objectives** is to gain practical skills in producing high-quality, ecologically clean products with minimal energy and labor costs and maximum output per unit time and area, which requires the wide implementation of varietal, intensive, energy- and resource-saving ecologically sound technologies. Theoretical basis of labor protection, legal basis of labor protection for workers in crop production, safety engineering in crop production, and fire safety in crop production are covered. The course is aimed at forming a system of knowledge on crop production

among future specialists, developing skills in rational selection and effective application of different elements of technology in order to increase crop productivity, reduce the cost of production, and enhance the competitiveness of the products obtained.

***Acquisition of competences:***

Integral competence (IC): The ability to solve complex specialized tasks and practical problems characterized by complexity and uncertainty in the field of management or in the process of learning, which involves the application of theories and methods of social and behavioral sciences.

General competences (GC):

GC 4. Ability to apply knowledge in practical situations.

Special (professional) competences (SC):

SC 1. Ability to identify and describe the characteristics of an organization.

SC 2. Ability to analyze the performance of an organization and compare it with the factors of influence from the external and internal environment.

SC 6. Ability to act socially responsibly and consciously.

SC 10. Ability to evaluate the performed work, ensure its quality, and motivate the organization's personnel.

SC 12. Ability to analyze and structure organizational problems, formulate well-founded decisions.

SC 16. Ability to identify and analyze new market opportunities, including the international business environment, formulate new ideas, develop projects, and organize business process management.

Expected Learning Outcomes (ELO):

**ELO 4.** Demonstrate skills in identifying problems and justifying managerial decisions.

**ELO 5.** Describe the content of the functional areas of an organization's activities.

**ELO 6.** Demonstrate skills in searching for, collecting, and analyzing information, and performing calculations.

**ELO 12.** Evaluate the legal, social, and economic consequences of an organization's functioning.

## 2. Programme and structure of the discipline for:

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

Modules and topics	Number of hours													
	full-time							part-time						
	weeks	total	including					in total	including					
			l	p	lab	ind	s.st		l	p	lab	ind	s.st	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	
<b>Module 1: Management of the production process of cultivation technologies of cereals</b>														
Topic 1. The development of plant science and agriculture as a production industry. The current state of plant production in Ukraine and worldwide.	1	6	2	-	2	-	2	5	1	-	-	4	-	
Topic 2. Cereals is a basis of crop production	2	8	2	-	2	-	4	7	1	-	-	6	-	
Topic 3. Organizational principles of effective winter wheat cultivation.	3	8	2	-	2	-	4	10	2	-	-	8	-	
Topic 4. Early and late spring cereals – organizational principles of effective cultivation	4	8	2	-	2	-	4	8	-	-	-	8	-	
Topic 5. Legumes. Management in cultivation technologies of peas and soybean	5	8	2	-	2	-	4	8	-	-	-	8	-	
<b>Total for module 1</b>		<b>38</b>	<b>10</b>	<b>-</b>	<b>10</b>	<b>-</b>	<b>18</b>	<b>38</b>	<b>4</b>	<b>-</b>	<b>-</b>	<b>34</b>	<b>-</b>	
<b>Module 2: Organization of cultivation of industrial crops (raw materials) for processing industry.</b>														
Topic 6. Tuber crops. general characteristics features at management of production	6	8	2	-	2	-	4	6	-	-	-	6	-	
Topic 7. Root crops. Sugar beets is a main raw material for sugar production	7	8	2	-	2	-	4	8	-	2	-	6	-	

1	2	3	4	5	6	7	8	9	10	11	12	13	14
Topic 8. The place of oil crops in Ukraine and the world. Choosing a crop and management in its cultivation	8	8	2	-	2	-	4	10	-	-	-	10	-
Topic 9. Sunflower and rapeseed - the main oil crops of Ukraine and the world	9	10	2	-	2	-	6	10	-	-	-	10	-
<b>Total for module 2</b>	<b>36</b>		<b>8</b>	<b>-</b>	<b>8</b>	<b>-</b>	<b>18</b>	<b>36</b>	<b>2</b>	<b>2</b>	<b>-</b>	<b>32</b>	<b>-</b>
<b>Module 3: Mechanization in crop production. Theoretical basis of Labor protection</b>													
Topic 10. General issues of the discipline. Tractors and cars. Machines for tillage, fertilization and planting of crops.	10	8	2		2		4	8	2	-	-	6	
Topic 11. Machines for plant protection, green harvesting and harvesting of cereal crops	11	8	2		2		4	8	-	-	2	6	
Topic 12. Machines for post-harvest processing of cereals, harvesting corn and potatoes	12	8	2		2		4	6	-	-	-	6	
Topic 13. Machines for harvesting root crops of beets, flax, vegetables and fruit and berry crops.	13	6	2		2		2	6	-	-	-	6	
Topic 14. Organization of Labor Protection in Crop Production	14	9	2		2		5	8	-	-	-	8	
Topic 15. Labor Protection when Working with Mechanisms	15	9	2		2		5	10	-	-	-	10	
<b>Total for module 3</b>	<b>48</b>		<b>12</b>		<b>12</b>		<b>24</b>	<b>48</b>	<b>2</b>	<b>2</b>	<b>-</b>	<b>42</b>	<b>-</b>
<b>Total hours</b>	<b>120</b>		<b>30</b>	<b>-</b>	<b>30</b>	<b>-</b>	<b>60</b>	<b>120</b>	<b>6</b>	<b>6</b>	<b>-</b>	<b>108</b>	<b>-</b>

### 3. Topics of laboratory (practical, seminar) classes

№	Topic title	Hours
1	General characteristics of cereal crops.	2
2	Characteristics of crops and their growth phases	2
3	Botanical and morphological characteristics of wheat.	2
4	Morphological structure of corn.	2
5	Legume crops. Features of growth and development.	2
6	Potatoes. Botanical characteristics.	2
7	General characteristics of root vegetables.	2
8	Characteristics of representatives of the oil crop group.	2
9	Sunflower. Morphological structure.	2
10	Ensuring Working Conditions in Enclosed Spaces	2
11	General issues of the discipline. Tractors and cars. Machines for tillage, fertilization and planting of crops.	2
12	Machines for plant protection, green harvesting and harvesting of cereal crops	2
13	Machines for post-harvest processing of cereals, harvesting corn and potatoes	2
14	Machines for harvesting root crops of beets, flax, vegetables and fruit and berry crops	2
15	Ensuring Safe Working Conditions in the Field	2
Total		30

### 4. Topics for self-study

№	Topic title	Hours
1	Spring barley: significance, biological features, cultivation technology.	6
2	Buckwheat: significance, biological features, cultivation technology.	6
3	Lentils: significance, biological features, cultivation technology.	4
4	Chickpeas: significance, biological features, cultivation technology.	4
5	Oil crops of the Brassicaceae family.	6
6	Essential oil crops.	5
7	Fiber crops.	5
8	Setting up a machine for tillage, fertilizing and planting of crops.	14
9	Labor protection documentation	10
Total		60

## 5. Tools for assessing expected learning outcomes:

- exam;
- module tests;
- essay
- presentation of laboratory and practical 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);
- individual research work;

## 7. Assessment methods:

- exam;
- oral or written assessment;
- module tests;
- essays and reports;
- presentation of laboratory and practical works;
- presentations at academic events
- other types.

## 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 NULES 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=459>;
- lectures and presentations (in electronic form);\
- Course of lectures of the discipline “SYSTEM OF TECHNOLOGY: CROP PRODUCTION” for students of specialty 073 "Management", education degree «Bachelor». 2021.
- SYSTEM OF TECHNOLOGY:CROP PRODUCTION. Methodical recommendations for practical works and individual study of the discipline for students of specialty 073 Management, education degree «Bachelor»

## 10. Recommended sources of information

1. *CROP PRODUCTION GUIDE AGRICULTURE. Tamil Nadu Agricultural University. Link: <https://www.freebookcentre.net/biology-books-download/gotoweb.php?id=13855>*
2. Graham Thiele, Michael Friedmann, Hugo Campos, Vivian Polar, Jeffery W. Bentle. Root, Tuber and Banana Food System Innovations. Springer, 2022. DOI: <https://doi.org/10.1007/978-3-030-92022-7>
3. Kalenska S., Dmytrishak M., Antal T., Mazurenko B., Crop production with basis of fodder production, Kyiv, 2021. [In Ukrainian]
4. Petrichenko V.F., Lykhochvor V.V. Roslynnystvo. Novi tekhnolohii vyrashchuvannia polevykh kultur: pidruchnyk. - 5-te vid., vyrav., dopov. Lviv: NVF "Ukrainski tekhnolohii", 2020. 806 p. (Title: Crop Production. New Technologies for Field Crop Cultivation: Textbook)

### Additional sources of information

1. Crop production manual. FAO. 2020. Available at: <https://www.fao.org/3/ca7556en/CA7556EN.pdf>
2. Statistics in Agriculture. Available at: <https://fao.org/faostat>
3. Ministry of Agriculture Politics <http://www.minagro.kiev.ua/>
4. Technology of cultivation (field crops) <http://agro-business.com.ua/>
5. Technology of cultivation (field crops) <https://www.agronom.com.ua/>
6. Precision farming (Demo tools for studying) <https://www.agrivi.com/blog/precision-farming/>
7. All about pesticides <https://pesticidestewardship.org/homeowner/understanding-pest-management/>

9.