



**SYLLABUS OF AN ACADEMIC DISCIPLINE**  
**PLANT SCIENCE AND THE BASICS OF FODDER**  
**PRODUCTION**

**Academic degree - Bachelor's**  
**Specialty 202 Plant Protection and Quarantine**  
**Academic programme Plant Protection and Quarantine**

**Year of study 3, semester 5**  
**Form of study** full-time, part-time  
**Number of ECTS credits 4**  
**Language of instruction** English

**Lecturer of the discipline**  
**Lecturer's contact**  
**information (e-mail)**

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**URL of the e-learning course on**  
**the NULES e-learning portal**

<https://elearn.nubip.edu.ua/course/view.php?id=459>

**ACADEMIC DISCIPLINE DESCRIPTION**

Purpose of the course is to provide the theoretical knowledge and practical skills of the production of plant products, skills in the rational choice and effective use of various elements of technology in order to increase the productivity of culture and reduce the cost of production. Objectives is to develop the students' knowledge and skills in the based on the study of plant biological characteristics, students will be able to further develop measures and methods for optimizing environmental factors to maximize the potential of agricultural crop productivity. The discipline is based on the knowledge about the plants of field culture, the peculiarities of their development, the requirements for environmental factors, modern techniques and technologies for the cultivation of high yields of high quality at the lowest cost of labor and funds. In turn, crop production is the basis for such sciences as economics and organization of agricultural production.

**Competences of the discipline:**

*Integral competence (IC):* The ability to solve complex specialized tasks and practical problems in professional activities related to plant protection and quarantine, and to apply theoretical knowledge and methods of phytosanitary monitoring, inspection, analysis, and expertise characterized by complexity and uncertainty of conditions.

*General competences (GC):*

GC 2. The ability to apply knowledge in practical situations.

GC 3. Knowledge and understanding of the subject area and understanding of professional activities.

GC 6. Skills in using information and communication technologies for professional activities.

*Special (professional) competences (SC):*

SC 8. The ability to comprehensively apply methods for long-term regulation, development, and spread of harmful organisms to economically non-detectable levels based on forecasting, economic thresholds of harm, effectiveness of beneficial organisms, energy-efficient and environmentally friendly technologies, ensuring reliable plant protection and environmental safety in accordance with the WTO SPS Agreement and the provisions of EU legislation.

**Expected Learning Outcomes (ELO):**

ELO 6. Correctly utilize appropriate methods of observation, description, identification, classification, cultivation of agrobiocenoses, and maintaining their stability to preserve natural biodiversity.

ELO 7. Create technological maps for organizing plant protection measures.

ELO 8. Be able to coordinate, integrate, and improve the organization of production processes during plant protection measures.

## ACADEMIC DISCIPLINE STRUCTURE

Topic	Hours (lecture/laboratory, practical, seminar)	Learning outcomes	Tasks	Assessment
<b>Semester 1</b>				
<b>Content Module 1: Food crops. Morphological and biological features of crops</b>				
Topic 1. Winter cereals: general characteristics (wheat, rye, triticale, barley).	<b>2/2</b>	To know about the current state and prospects of development in the field of crop production	Perform laboratory work 1. General characteristics of cereal crops.	<b>10</b>
Topic 2. Spring cereals: early spring cereal crops (wheat, barley, oats).	<b>2/2</b>	To know the significance, distribution, morphological, and biological characteristics of agricultural crops.	Perform laboratory work 2. Characteristics of crops and growth stages of cereal crops. Independent work 1.	<b>10</b>
Topic 3. Late spring cereals (corn, millet, sorghum, foxtail millet, rice, buckwheat).	<b>2/2</b>	To know modern technologies for cultivating field crops and the peculiarities of their implementation in the soil-climatic zones of Ukraine.	Perform laboratory work 3. Botanical and morphological characteristics of wheat.	<b>10</b>
Topic 4. Grain legumes (peas, soybeans, beans, lentils, chickpeas, lupins, fodder legumes).	<b>2/2</b>	To know the ways to improve the quality of agricultural products.	Perform laboratory work 4. Features of the morphological structure of corn. Independent work 2.	<b>10</b>
Topic 5. Root and tuber crops	<b>2/2</b>	To know the sources of costs for cultivating agricultural crops and ways to optimize them.	Perform laboratory work 5. Leguminous crops. Growth and development features.	<b>10</b>
<b>Content Module 2: Industrial and niche crops</b>				
Topic 6. Sugar crops (sugar beets).	<b>2/2</b>	Being able to plan and organize the implementation of technological procedures in crop production.	Perform laboratory work 6. Independent work 3.	<b>10</b>
Topic 7. Oil crops (sunflower, rapeseed, oil poppy, etc.).	<b>2/2</b>	Understanding and being able to apply innovative elements in crop cultivation technologies.	Perform laboratory work 7.	<b>10</b>
Topic 8. Essential oil crops (coriander, cumin, fennel, mint, sage, etc.).	<b>2/2</b>	Being able to program the yield of agricultural crops.	Perform laboratory work 8. Independent work 4.	<b>10</b>
Topic 9. Fiber crops (flax, hemp, cotton).	<b>2/2</b>	Knowing and being able to plan the production of	Perform laboratory work 9.	<b>10</b>

		high-quality, environmentally safe products with minimal energy costs per unit of output.		
Topic 10. Energy crops (plants for various fuel production: biodiesel, bioethanol, solid fuels).	2/2	Being able to program the yield of agricultural crops.	Perform laboratory work 10.	10
<b>Content Module 3. Fodder crops. Fodder production and meteorology</b>				
Topic 11. Field forage production.		Students will be able to understand the principles and practices of field forage production, including crop selection, soil preparation, and management techniques for optimal yield.	Perform laboratory work 11.  Independent work 6.	10  10
Topic 12. Pasture forage production.		Students will be able to evaluate the management strategies for pasture forage production, including grazing systems, pasture establishment, and maintenance for sustainable livestock	Perform laboratory work 12.	10
Topic 13. Harvesting and preservation of silage.		Students will understand the techniques and timing of harvesting forage for silage and the methods for preserving its nutritional value through proper ensiling processes.	Perform laboratory work 13.  Independent work 7.	10  10
Topic 14. Major agrometeorological factors and ways of their effective utilization in agriculture.		Students will comprehend the impact of major agrometeorological factors on agricultural productivity and learn how to utilize weather data effectively to enhance crop management.	Perform laboratory work 14.	10
Topic 15. Climate and its importance for agriculture. agrometeorological forecasts.		Students will gain an understanding of the relationship between climate and agriculture, and the importance of agrometeorological forecasts in optimizing agricultural practices.	Perform laboratory work 15.	10
<b>Total for 1 semester</b>	<b>18/18</b>			<b>70</b>
<b>Exam</b>				<b>30</b>
<b>Total for course</b>				<b>100</b>

## ASSESSMENT POLICY

<b>Deadlines and exam retaking policy:</b>	<ul style="list-style-type: none"> <li>• Tasks must be submitted on time, according to the delivery schedule.</li> <li>• Penalty for delay:               <ul style="list-style-type: none"> <li>- 10% – less 1 month</li> <li>- 20% – more 1 month</li> </ul> </li> </ul> <p>Re-assessment will be allowed if you pass all tasks in module</p>
<b>Academic integrity policy:</b>	Plagiarism and re-delivery tasks don't allow
<b>Attendance policy:</b>	Attendance is mandatory. For objective reasons (for example, illness, international internship) training can take place individually (in online form in consultation with the dean of the faculty)

### 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. *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.M., Dmytryshak M.Ya., Mokriyenko V.A. *Zernovi ta zernobobovi kultury. Navchalnyi posibnyk. - Vinnytsia: TOV "TVORY". 2020. 366 p. (Title: Cereals and Legume Crops. Educational Manual)*
4. Mazur V.A., Polishchuk I.S., Tekalo N.V., et al. *Roslynnystvo. Navchalnyi posibnyk. – Vinnytsia: TOV "Druk". 2020. 352 p. (Title: Crop Production. Educational Manual)*
5. 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)*
6. *Roslynnystvo z osnovamy kormovyrobnytstva ta agrometeorolohii. Chastyna 1: pidruchnyk/ S.M. Kalenska, M.Ya. Dmytryshak, V.A. Mokriyenko, et al. – Kyiv: Printeko, 2023. 610 p. (Title: Crop Production with Basics of Forage Production and Agrometeorology. Part 1: Textbook)*