



SYLLABUS OF AN ACADEMIC DISCIPLINE PLANT SCIENCE

Academic degree - Bachelor's
Specialty 201 Agronomy
Academic programme Agronomy

Year of study 2-3, semester 3-5
Form of study full-time, part-time
Number of ECTS credits 9
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

Svitlana Kalenska

mazurenko.bohdan@nubip.edu.ua

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

ACADEMIC DISCIPLINE DESCRIPTION

On a global scale, the main task of plant cultivation is to meet the growing needs of the population for food products, the livestock sector for feed, and various branches of industry such as textiles, food, and others for raw materials. Plant cultivation as a science studies various types, forms, and varieties of field crops, the theoretical foundations, and practical measures for obtaining high and sustainable yields with minimal labor and material resources. In a broad sense, plant cultivation involves the cultivation of various cultivated plants. The main goal of the discipline is to prepare the student for future independent professional work with the generalized object of activity: agricultural crops, soil, fertilizers, machinery, land reclamation, and plant protection. As a result of studying the discipline, a young specialist should be able to: develop, improve, and effectively implement cultivation technologies for field crops under various forms of ownership and management; monitor crop conditions and manage crop yield formation processes; ensure high economic efficiency of implemented technologies; develop and implement measures to improve the quality and reduce losses of crop production.

Competences of the discipline:

Integral competence (IC): The 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 comprehensiveness and suitability to zonal conditions.

General competences (GC):

GC6. Knowledge and understanding of the subject area and comprehension of professional activities;

GC7. Ability to apply knowledge in practical situations.

Special (professional) competences (SC):

SC1. Basic knowledge of the main branches of agricultural science (crop production, farming, breeding and seed production, agrochemistry, fruit growing, vegetable growing, soil science, fodder production, mechanization in crop production, plant protection);

SC3. Knowledge and understanding of the basic biological and agrotechnological concepts, rules, and theories related to the cultivation of agricultural and other plants.

SC4. The ability to apply knowledge and understanding of the physiological processes of agricultural plants to solve production and technological problems

SC9. The ability to manage complex actions or projects and take responsibility for decision-making in specific production conditions.

Expected Learning Outcomes (ELO):

ELO4. To compare and evaluate modern scientific and technical achievements in the field of agronomy.

ELO6. To demonstrate knowledge and understanding of fundamental disciplines to the extent

necessary for acquiring relevant skills in the field of agronomy.

ELO7. To demonstrate knowledge and understanding of the principles of plant physiological processes to the extent necessary for mastering fundamental and professional disciplines.

ELO9. To possess operational-level proficiency in methods of observation, description, identification, classification, as well as cultivation of objects, and maintaining the stability of agroecosystems while preserving natural biodiversity.

ELO10. To analyze and integrate knowledge from general and specialized professional training to the extent required for specialized professional work in the field of agronomy.

ELO11. To initiate timely and appropriate solutions to production problems in accordance with zonal conditions.

ELO13. To design and organize measures for the cultivation of high-quality agricultural produce in accordance with current requirements.

ELO14. To integrate and improve production processes for cultivating agricultural produce in accordance with current requirements.

ELO15. To plan economically viable agricultural production.

ELO16. To organize productive and safe working conditions.

ACADEMIC DISCIPLINE STRUCTURE

Topic	Hours (lecture/laboratory, practical, seminar)	Learning outcomes	Tasks	Assessment
Semester 1				
Content Module 1: Features and prospects of using marketing tools in crop production				
Topic 1. General characteristics of the crop production market in Ukraine. Crop production as a science and an agricultural sector.	2/2	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.	11
Topic 2. About grain and the grain market in Ukraine and the World. Grain industry products.	2/2	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.	11 5
Topic 3. Marketing approaches in winter wheat cultivation	2/2	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.	11
Topic 4. Early and late spring cereals – organizational principles of effective cultivation	2/2	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.	11 5
Topic 5. The legume market: development, trends, and forecasts. marketing approaches in pea and soybean cultivation technologies.	2/2	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. Independent work 3.	11 5

Module 2. Organization of cultivation of industrial crops (raw materials) for processing industry.				
Topic 6. The tuber market. general characteristics and features of using marketing tools in their cultivation technology.	2/2	Being able to plan and organize the implementation of technological procedures in crop production.	Perform laboratory work 6. Potato. Botanical characteristics. Independent work 4.	12 5
Topic 7. Root crops. Sugar beets as the primary raw material for sugar production in Ukraine.	2/2	Understanding and being able to apply innovative elements in crop cultivation technologies.	Perform laboratory work 7. General characteristics of root crops. Independent work 5.	12 5
Topic 8. The role of oilseed crops in the market in Ukraine and the World.	2/2	Being able to program the yield of agricultural crops.	Perform laboratory work 8. Characteristics of representatives of the oilseed group. Independent work 6.	13 5
Topic 9. Sunflower and rapeseed – the main oilseed crops of Ukraine and the World. Factors influencing successful cultivation.	2/2	Knowing and being able to plan the production of high-quality, environmentally safe products with minimal energy costs per unit of output.	Perform laboratory work 9. Sunflower. Morphological structure. Independent work 7.	13 5
Content Module 3. Mechanization in crop production. Theoretical basis of Labor protection				
Topic 10. Organization of Labor Protection in Crop Production	2/2	Students will be able to identify and implement safety measures and protocols to ensure the protection of workers engaged in crop production activities	Perform laboratory work 10. Independent work 8.	8 10
Topic 11. General issues of the discipline. Tractors and cars. Machines for tillage, fertilization and planting of crops.	2/2	Students will gain a comprehensive understanding of the types and functionalities of tractors, cars, and various agricultural machines used for soil preparation, fertilization, and crop planting.	Perform laboratory work 11.	7
Topic 12. Machines for plant protection, green harvesting and harvesting of cereal crops	2/2	Students will be equipped with the knowledge to operate and maintain machines designed for crop protection, green harvesting, and harvesting of cereal crops efficiently and effectively.	Perform laboratory work 12.	8
Topic 13. Machines for post-harvest processing of cereals, harvesting corn and potatoes	2/2	Students will develop proficiency in utilizing machines for post-harvest processing of cereals as well as harvesting corn and potatoes, ensuring optimal handling and storage practices.	Perform laboratory work 13. Independent work 9.	7 10
Topic 14. Machines for harvesting root crops of beets, flax, vegetables and fruit and berry	2/2	Students will learn to operate and manage machines specialized in the harvesting of root crops, including beets,	Perform laboratory work 14.	10

crops		flax, various vegetables, and fruit and berry crops, while maintaining quality.		
Topic 15. Labor Protection when Working with Mechanisms	2/2	Students will acquire the necessary skills and knowledge to ensure the safety of personnel when operating machinery,	Perform laboratory work 15.	10
Total for 1 semester	30/30			70
Exam				30
Total for course				100

ASSESSMENT POLICY

Deadlines and exam retaking policy:	<ul style="list-style-type: none"> • Tasks must be submitted on time, according to the delivery schedule. • Penalty for delay: <ul style="list-style-type: none"> - 10% – less 1 month - 20% – more 1 month Re-assessment will be allowed if you pass all tasks in module
Academic integrity policy:	Plagiarism and re-delivery tasks don't allow
Attendance policy:	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. Bente. 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. Roslynnnytstvo. Navchalnyi posibnyk. – Vinnytsia: TOV "Druk". 2020. 352 p. (Title: Crop Production. Educational Manual)
5. Petrichenko V.F., Lykhochvor V.V. Roslynnnytstvo. 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. Roslynnnytstvo 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)