



## **SYLLABUS OF THE EDUCATIONAL DISCIPLINE** **«Technology of storage and processing of crop products»**

**Degree of higher education - Bachelor**  
**Specialization 201 Agronomy**  
**Educational programme «Agronomy»**  
**Academic year 4, semester 7**  
**Form of study full-time**  
**Number of ECTS credits 5.0**  
**Language of instruction English**

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**Course page on eLearn** <https://elearn.nubip.edu.ua/course/view.php?id=2742>

### **COURSE DESCRIPTION**

*(up to 1000 printed characters)*

The discipline is studied in the final year of the Bachelor's degree program for specialists in agricultural science, after students have already learned the agronomy of growing various cereal, legume, groat, oilseed, technical, vegetable, and fruit crops. The program includes technology for post-harvest processing, storage, and primary processing of various types of cereal, groat, and legume crops for different purposes, as well as fruits, vegetables, potatoes, berries, and technical crops (such as sugar beets, flax, hops, and essential oils). The course curriculum covers the study of crop storability and its ability to produce certain processed products under favorable growing conditions and under deviations, as well as how protective factors and agrochemicals affect the quality of fresh or processed products. The basics of drying, cooling, chemical preservation, and storage of grain and other types of products are also covered. The course also examines the impact of growing and post-harvest processing factors on the storability of potatoes and vegetables, the theoretical foundations of long-term storage, and the basics of primary processing of agricultural products. Students will learn to meet the standards for agricultural products and to evaluate the quality of agricultural products in accordance with these standards. Become an expert in the field.

#### **Competencies of the educational programme:**

*Integrative competency (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 complexity and compliance with zonal conditions.

*General competencies (GC):* GC 6. Knowledge and understanding of the subject area and professional activity; GC 7. Ability to apply knowledge in practical situations; GC 8. Skills for performing safe activities; GC 9. Ability to search for, process, and analyze information from various sources.

*Professional (special) competencies (PC):* PC 2. The ability to cultivate, propagate, and manage agricultural crops, and carry out technological operations for primary processing and storage of products; PC 4. The ability to apply knowledge and understanding of physiological processes of agricultural plants to solve production and technological tasks; PC 9. The ability to manage complex actions or projects, with responsibility for making decisions in specific production conditions.

**Program learning outcomes (PLO) of the educational programme:** PLO 4. Compare and evaluate modern scientific and technical achievements in the field of agronomy; PLO 6. Demonstrate knowledge and understanding of fundamental disciplines to the extent necessary to possess relevant skills in the field of agronomy; PLO 10. Analyze and integrate knowledge from general and specialized professional training to the extent necessary for specialized professional work in the field of agronomy; PLO 11. Initiate timely and appropriate solutions to production problems in accordance with zonal conditions. PLO 13. Design and organize events for the cultivation of high-quality agricultural products in accordance with current requirements; PLO 14. Integrate and improve production processes for the cultivation of agricultural products in

accordance with current requirements; PLO 15. Plan economically viable production of agricultural products.

### COURSE STRUCTURE

Topic	Hours (lecture/laboratory, independent)	Learning outcomes	Tasks	Assessment
<b>Semester 7</b>				
<b>Module 1</b>				
Topic 1. The significance of the storage and processing of agricultural products/ Sampling of point samples, compilation of combined and average daily samples; Organoleptic (sensory) assessment of grain.	3/3/10	To know and understand the importance of the field of storage and processing of plant products for modern farming conditions. Master the methods and acquire practical skills for taking point samples and forming average and average daily samples from different batches of grain. Acquisition of practical skills in determining organoleptic indicators of grain quality.	Passing L.w. 1. Completion and submission in Elearn I.w. 1.	<b>15/5 20</b>
Topic 2. Grain mass as an object of post-harvest processing and storage / Determination of grain contamination by collared pests and damage by the shell bug; Determining the nature of the grain on a liter scale.	3/3/10	Know and understand the importance of the components of grain mass and their influence on the preservation of grain and grain products. Be able to determine contamination of grain by collared pests and damage by the shell bug. Mastering the methodology and acquiring practical skills for determining the nature of grain on a liter scale.	Passing L.w. 2. Completion and submission in Elearn I.w. 2.	<b>20/5 25</b>
Topic 3. Physical and physiological properties of grain masses. Self-heating of grain masses / Determination of grain moisture; Determination of the content of impurities in grain (seeds).	3/3/10	To know the physical and physiological properties of grain mass as a storage object. To be able to determine moisture content and the content of impurities in grain (seeds).	Passing L.w. 3. Completion and submission in Elearn I.w. 1.	<b>20/5 25</b>
<b>Writing the module 1</b>				<b>30</b>
<b>Total for 1 Module</b>				<b>100</b>
<b>Module 2</b>				
Topic 1. Post-harvest processing of grain crops / Technological calculations on grain and seed cleaning	3/3/10	To know the technology of postharvest processing of grain products. To be able to recommend the technology of post-harvest processing of the grain mass that arrives after harvesting. To master the methods of carrying out calculations for the cleaning of grain and seeds.	Passing L.w. 4. Completion and submission in Elearn I.w. 4.	<b>10/4 14</b>

Topic 2. Active ventilation of grain crops. Grain drying, regimes and methods of drying./ Technological calculations on grain and seed drying; Active ventilation of grain masses.	3/3/10	Know the technology of active ventilation and drying of grain masses. Be able to control technological parameters and grain products in the process of active ventilation and drying. To master the methods of carrying out calculations on ventilation and drying of grain and seeds.	Passing L.w. 5. Completion and submission in Elearn I.w. 5.	<b>10/4 14</b>
Topic 3. General principles of preserving plant raw materials/ Determination of types and subtypes of grain crops	3/3/10	Know the basic principles of storage of plant products - fresh and processed. To be able to determine the need for storage facilities, to draw up a plan for depositing grain for various purposes in storage facilities. Master the methods of determining types and subtypes of grain crops.	Passing L.w. 6. Completion and submission in Elearn I.w. 6.	<b>10/4 14</b>
Topic 4. Basics of grain processing for flour and bread baking/ Determination of the quantity and quality of crude gluten in wheat grain.	3/3/10	To know the peculiarities of grain products as an object of processing. Understand the basics of grain processing technologies and bakery production technologies. To be able to control the processing of grain products and the technology of bakery production. Master the methods of determining the quantity and quality of raw gluten in wheat grains.	Passing L.w. 7. Completion and submission in Elearn I.w. 7.	<b>10/4 14</b>
Topic 5. Basics of processing of cereal and oilseed crops/ Determination of the autolytic activity of grain and flour by the number of falls on the Hagberg-Perten device.	3/3/10	To know the peculiarities of grain and oil crops as an object of processing. Understand the basics of grain and oil production technologies. Be able to control the processing of cereal crops. master the methods of determining the autolytic activity of grain and flour by the number of falls on the Hagberg-Perten device.	Passing L.w. 8. Completion and submission in Elearn I.w. 8.	<b>10/4 14</b>
<b>Writing the module 2</b>				<b>30</b>
<b>Total for 2 Module</b>				<b>100</b>

<b>Module 3</b>				
Topic 1. Post-harvest treatment and storage of vegetable crops/ Placement of grain stocks (seeds) for storage; Quantitative - qualitative accounting of grain during post-harvest processing and storage.	3/3/10	To know the peculiarities of vegetable production as an object of post-harvest processing and storage. To be able to recommend the technology of post-harvest processing and storage of vegetables that arrive after harvesting. Be able to control the process of long-term storage of vegetables.	Passing L.w. 9. Completion and submission in Elearn I.w. 9.	Topic 1 - 10; L.w. 13 - 10; L.w. 14 - 10
Topic 2. Post-harvest treatment and storage of potato tubers/ Calculations for grain depending on its quality.	3/3/10	To know the features of potato tubers as an object of post-harvest processing and storage. To be able to recommend the technology of post-harvest processing and storage of potato tubers that arrive after harvesting. Be able to monitor the long-term storage of potato tubers.	Passing L.w. 10. Completion and submission in Elearn I.w. 10.	Topic 2 - 10; L.w. 15 - 10
Topic 3. Specifics of post-harvest treatment and storage of fruit and berry products/ Evaluation of grain quality of cereal crops	3/3/10	To know the peculiarities of fruit and berry products as an object of post-harvest processing and storage. Be able to recommend the technology of post-harvest processing and storage of fruit and berry products that arrive after harvesting. Be able to control the process of long-term storage of fruit and berry products.	Passing L.w. 11. Completion and submission in Elearn I.w. 11.	Topic 3 - 10; L.w. 16 - 10
Topic 4. Basics of processing fruit and vegetable products/ Determination of flour quality; Evaluation of the quality of flour by the method of laboratory test baking.	3/3/10	To know the features of fruit and vegetable products as a processing object, the basics of fruit and vegetable processing technologies, features of finished (processed) fruit and vegetable products as storage objects. Be able to prepare a batch of fruit and vegetable products for processing and sale. Be able to determine methods of processing fruit and vegetable products.	Passing L.w. 12. Completion and submission in Elearn I.w. 12.	Topic 4 - 10; L.w. 17 - 10; L.w. 18 - 10
<b>Writing the module 3</b>				<b>30</b>
<b>Total for 3 Module</b>				<b>100</b>

<b>Module 4</b>			
Topic 1. Basics of post-harvest processing, storage, and processing of technical raw materials/ Determining the quality of potato tubers; Storage of potatoes and vegetables in temporary (field) storage; Organization of fruit and vegetable storage	3/3/10	To know the technology of post-harvest processing, storage and processing of technical raw materials. To be able to control the quality of raw materials of industrial crops (sugar beet, oilseed, linseed).	Topic 1 - 20; L.w. 19 - 10; L.w. 20 - 10; L.w. 21 - 10  Passing L.w. 13. Completion and submission in Elearn I.w. 13.
Topic 2. Basics of technology for the production and storage of mixed feeds and plant-based feed/ Production of sauerkraut; Assessment of the quality of technical purpose sugar beets; Evaluation of the quality of raw flax.	3/2/10	To know the technology of production and storage of compound feed and feed of plant origin. To be able to control the quality of execution of technological processes and the quality of feed and feed of plant origin.	Topic 2 - 20; L.w. 22 - 10; L.w. 23 - 10; L.w. 24 - 10  Passing L.w. 14. Completion and submission in Elearn I.w. 14.
Topic 3. Basics of post-harvest processing, storage, and processing of sugar beet	3/2/10	Know the technology of temporary storage of sugar beets and the main technological stages of their processing into sugar. Be able to control the quality of raw materials (sugar beet) and finished product (sugar)	Passing L.w. 15. Completion and submission in Elearn I.w. 15.
<b>Writing the module 4</b>			<b>30</b>
<b>Total for 4 Module</b>			<b>100</b>
<b>Total for 7 semester</b>			<b>70</b>
<b>Exam</b>			<b>30</b>
<b>Total for course</b>			<b>100</b>

### **ASSESSMENT POLICY**

<b><i>Policy regarding deadlines and resits:</i></b>	Assignments submitted after the deadline without valid reasons will be graded lower. Resiting of modules will be allowed with the permission from the lecturer and in the presence of valid reasons (e.g. medical reasons).
<b><i>Academic honesty policy:</i></b>	Cheating during tests and exams is strictly prohibited (including the use of mobile devices). Coursework and research papers must contain correct citations for all sources used.
<b><i>Attendance policy:</i></b>	Class attendance is mandatory. In case of objective reasons (such as illness or international internships), individual learning may be allowed (in online format by the approval of the dean of the faculty).

## SCALE FOR ASSESSING KNOWLEDGE OF HIGHER EDUCATION ACQUIRES

Student rating, points	National grade based on exam results	
	exams	credits
90-100	excellent	passed
74-89	good	
60-73	satisfactory	
0-59	unsatisfactory	not passed

### RECOMMENDED SOURCES OF INFORMATION

1. Подпратов Г.І. Переробка продукції рослинництва : Навчальний посібник / Г.І. Подпратов, А.В. Бобер. - К.: ЦП «Компринт», 2017. - 524 с.
2. Подпратов Г.І. Післязбиральна доробка та зберігання продукції рослинництва . Навчальний посібник / Г.І. Подпратов, А.В. Бобер. - К.: Редакційно-видавничий відділ НУБіП України, 2019. - 492 с.
3. Скалецька Л.Ф. Переробка продукції рослинництва : лабораторний практикум (навчальний посібник). / Л.Ф. Скалецька, А.В. Бобер, В.І. Рожко, Л.М. Хомічак. - К.: Центр інформаційних технологій, 2013. - 360 с.
4. Подпратов Г.І., Бобер А.В., Ящук Н.О. Технохімічний контроль продукції рослинництва. Навчальний посібник. 2-е вид., допов. і перероб. - К.: ЦП «Компринт», 2020. - 791 с.
5. Подпратов Г.І., Бобер А.В., Ящук Н.О. Технохімічний контроль продукції рослинництва. Підручник. - К.: ЦП «Компринт», 2022. - 790 с.
6. Подпратов Г.І., Бобер А. В., Гунько С.М. Переробка продукції рослинництва: Навчальний посібник. К. : НУБіП України, 2023. 580 с.