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Должность: Ректор
Дата подписания: 21.05.2025 10:13:05
Уникальный программный ключ:
ca953a0120d891083f939673078ef1a989dae18a

**Federal State Autonomous Educational Institution of Higher Education
PEOPLES' FRIENDSHIP UNIVERSITY OF RUSSIA
RUDN University**

Agrarian -Technological Institute

educational division (faculty/institute/academy) as higher education programme developer

COURSE SYLLABUS

Postharvest Management

course title

Recommended by the Didactic Council for the Education Field of:

35.04.04 Agronomy

field of studies / speciality code and title

The course instruction is implemented within the professional education programme of higher education:

General Agriculture

higher education programme profile/specialisation title

1. COURSE GOAL(s)

The purpose of mastering the discipline " Postharvest Management " is included in the master's degree program "General Agronomy" in the direction of 35.04.04 "Agronomy" and is studied in the 4th semester of the 2nd year. The discipline is implemented by the Agrobiotechnology Department. The discipline consists of 7 sections and 8 topics and is aimed at studying modern methods of determining the quality of grain, vegetables and fruits, traditional and promising methods of processing and storing vegetable raw materials, the use of standards and regulatory and technical documentation in professional activities.

The purpose of mastering the discipline is to form the necessary theoretical knowledge about the principles of storage and processing of crop products and about the main technological processes in the milling, baking and canning industries; to acquire practical skills in organizing the processing of crop products.

2. REQUIREMENTS FOR LEARNING OUTCOMES

Mastering the discipline " Postharvest Management " is aimed at the formation of the following competencies (part of the competencies) among students:

Table 2.1. List of competences that students acquire through the course study

Competence code	Competence descriptor	Competence formation indicators (within this course)
GC-1	Able to carry out a critical analysis of problematic situations based on a systematic approach, develop a strategy for action	GC-1.2 Uses a systematic approach to solve its tasks
GC-3	Able to organize and direct the work of the team, developing a team strategy to achieve the set goal	GC-3.1 Develops a strategy for cooperation and on its basis organizes the work of the team to achieve the set goal; GC-3.2 Plans teamwork, distributes assignments and delegates authority to team members, organizes the discussion of different ideas and opinions;
OPK-1	Able to solve the tasks of developing the field of professional activity and (or) organization based on the analysis of scientific and industrial achievements	OPK-1.1 Demonstrates knowledge of the basic methods of analyzing scientific and industrial achievements in agronomy; OPK-1.2 Uses methods for solving problems of agronomy development based on the search and analysis of modern achievements of science and production; OPK-1.3 Uses available technologies, including information and communication technologies, to solve the tasks of professional activity in agronomy;
OPK-5	Able to carry out feasibility studies of projects in professional activity	OPK-5.1 Is proficient in methods of economic analysis and accounting of project indicators in agronomy; OPK-5.2 Analyzes the main production and economic indicators of the project in agronomy; OPK-5.3 Develops proposals to improve the efficiency of the project in agronomy;
OPK-6	Able to manage teams and organize production processes	OPK-6.1 Is able to work with information systems and databases on personnel management issues; OPK-6.2 Defines the tasks of the personnel of the structural unit, based on the goals and strategy of the organization.; OPK-6.3 Applies methods for managing interpersonal relationships, forming teams, developing leadership and performance, identifying talents, and determining job satisfaction;
PC-3	Able to identify areas for improving and increasing the efficiency of crop production technologies based on scientific achievements and best practices of domestic and foreign manufacturers.	PC-3.1 Identifies promising areas for improving the efficiency of crop production; PC-3.2 Carries out operational regulation of the course of crop production;

3.COURSE IN HIGHER EDUCATION PROGRAMME STRUCTURE

Mastering the discipline " Postharvest Management " is aimed at forming the following competencies (part of the competencies) among students:

Table 3.1. The list of the higher education programme components/disciplines that contribute to the achievement of the expected learning outcomes as the course study results

Competence code	Competence descriptor	Previous courses/modules*	Subsequent courses/modules*
GC-1	Able to carry out a critical analysis of problematic situations based on a systematic approach, develop a strategy for action	<i>Management**; Marketing**;</i>	
GC-3	Able to organize and direct the work of the team, developing a team strategy to achieve the set goal	<i>Information Technology; Pests and Diseases; Soil Fertility Management; Crop Production; Management**; Marketing**; Technological Training; Научно-исследовательская работа;</i>	
OPK-1	Able to solve the tasks of developing the field of professional activity and (or) organization based on the analysis of scientific and industrial achievements	<i>Technological Training;</i>	
OPK-5	Able to carry out feasibility studies of projects in professional activity	<i>Crop Production; Soil Fertility Management; Pests and Diseases; Information Technology; Научно-исследовательская работа; Technological Training;</i>	
OPK-6	Able to manage teams and organize production processes	<i>Mechanization of Crop Production;</i>	
PC-3	Able to identify areas for improving and increasing the efficiency of crop production technologies based on scientific achievements and best practices of domestic and foreign manufacturers.	<i>Научно-исследовательская работа; Technological Training; Crop Production; Breeding and Seed Production; Plant Protection;</i>	

* To be filled in according to the competence matrix of the higher education programme.

4. COURSE WORKLOAD AND ACADEMIC ACTIVITIES

Possible wording

The total labor intensity of the discipline " Postharvest Management " is 4 credits for full-time education.

Table 4.1 – Types of educational work by periods of mastering the OP HE for full-time education

Type of academic activities		Total academic hours	Semesters/training modules			
			1	2	3	4
<i>Contact academic hours</i>		44				44
including:						
Lectures (LC)		22				22
Lab work (LW)						
Seminars (workshops/tutorials) (S)		22				22
<i>Self-studies</i>		90				90
<i>Evaluation and assessment (exam/passing/failing grade)</i>		10				10
Course workload	academic hours_	144				144
	credits	4				4

5. COURSE CONTENTS

Table 5.1. Course contents and academic activities types

Course module title	Course module contents (topics)	Academic activities types
Module 1: Fundamentals of crop production storage	1.1 Types of storage losses and factors causing them. Biosis, cenoanabiosis, abiosis, anabiosis and their varieties. Ways to reduce storage losses	LC; S
Module 2: Standardization of crop products	2.1 Standards and normative and technical documents, their categories. Methods for determining the quality of crop production. Standardization of grain and leguminous crops. Marketability, standardization and certification of fruits, vegetables and potatoes.	LC; S
Module 3: Storage of grain and seeds	3.1 Storage of grain and seeds. Grain mass and its main components. Physical characteristics of the grain mass. Biological properties of grain mass. Methods of storing grain masses. Storage of vegetable seeds.	LC; S
	3.2 Natural loss rates during grain storage. Natural loss as an indispensable component of the loss of grain mass during post-harvest processing and storage. Calculation of the coefficient of loss of natural loss of seed grain. Development of standards for the natural loss of grain and seeds during storage in different macroclimatic areas. Instructions for the application of the norms of natural loss of grain, grain products and seeds	LC; S

Course module title	Course module contents (topics)	Academic activities types
	during storage. The procedure for calculating the natural loss of grain and seeds	
Module 4: Fundamentals of baking	4.1 Nutritional value of bread. Methods of production of bread products. Baking properties of wheat and rye flour. Transportation and storage of bread. Diseases and defects of bread. The range of bakery products	LC; S
Module 5. Methods of preservation of fruit and vegetable raw materials	5.1 Biochemical and chemical changes of vegetable raw materials during canning. Storage of raw materials and their preparation for canning. The technology of production of certain types of canned food. Labeling, accounting, and storage of finished products.	LC; S
Module 6: Raw material characteristics of grapes and basic quality requirements	6.1 Microbiological and biochemical fundamentals of winemaking. The main technological schemes of grape processing. Classification and characterization of wines of various types. Diseases, defects of wine materials and wines; their prevention and treatment. Technology of production of non-alcoholic grape processing products.	LC; S
Module 7: Tea and basic quality requirements	7.1 Raw materials for tea production Chemical composition of tea. Tea leaf harvesting. Tea factories and tea classification. Tea production technology. Labeling and storage of finished products.	LC; S

* - to be filled in only for **full** -time training; LC - lectures; LW - lab work; S - seminars.

6. CLASSROOM EQUIPMENT AND TECHNOLOGY SUPPORT REQUIREMENTS

Table 6.1. Classroom equipment and technology support requirements

Type of academic activities	Classroom equipment	Specialised educational / laboratory equipment, software, and materials for course study (if necessary)
Lecture hall	An auditorium for conducting lecture-type classes, equipped with a set of specialized furniture; a blackboard (screen) and multimedia presentation equipment	
Seminary	An auditorium for seminar-type classes, group and individual consultations, ongoing monitoring and intermediate certification, equipped with a set of specialized furniture and multimedia presentation equipment.	
Self-studies	A classroom for independent work of students (can be used for seminars and consultations), equipped with a set of specialised furniture and	

Type of academic activities	Classroom equipment	Specialised educational / laboratory equipment, software, and materials for course study (if necessary)
	computers with access to the electronic information and educational environment.	

* The premises for students' self-studies are subject to **MANDATORY** mention

7. RESOURCES RECOMMENDED FOR COURSE STUDY

Main readings:

1. Glukhikh, M. A. Technology of storage and processing of crop production / M. A. Glukhikh. — St. Petersburg : Lan, 2024. — 128 p. — ISBN 978-5-507-47996-2. — Text : electronic // Lan : electronic library system. — URL: <https://e.lanbook.com/book/362765>

2. Economics and organization of production of agricultural enterprises: a textbook / compiled by N. V. Likholetova. — Persianovsky : Donskoy State University, 2024. - 181 p. — Text : electronic // Lan : electronic library system. — URL: <https://e.lanbook.com/book/459566>

Additional readings:

1. Kostko, I. G. Methodological recommendations for the study of the discipline "Storage and processing of crop production" : methodological recommendations / I. G. Kostko, A.M. Spiridonov. — St. Petersburg : SPbSAU, 2023. — 42 p. — Text : electronic // Lan : electronic library system. — URL: <https://e.lanbook.com/book/443714>

2. Technology of storage of agricultural products. Grain masses, potatoes, fruits and vegetables : textbook / O. A. Zakharova, F. A. Musaev, D. E. Kucher, O. V. Cherkasov. — Ryazan : RGATU, 2022. — 215 p. — Text : electronic // Lan : electronic library system. — URL: <https://e.lanbook.com/book/264233>

Internet sources

1. Electronic libraries (EL) of RUDN University and other institutions, to which university students have access on the basis of concluded agreements:

- RUDN Electronic Library System (RUDN ELS) <http://lib.rudn.ru/MegaPro/Web>
- EL "University Library Online" <http://www.biblioclub.ru>
- EL "Yurayt" <http://www.biblio-online.ru>
- EL "Student Consultant" www.studentlibrary.ru
- EL "Lan" <http://e.lanbook.com/>

2. Databases and search engines:

- electronic foundation of legal and normative-technical documentation <http://docs.cntd.ru/>
- Yandex search engine [https:// www .yandex.ru/](https://www.yandex.ru/)
- Google search engine <https://www.google.ru/>
- Scopus abstract database <http://www.elsevierscience.ru/products/scopus/>

Training toolkit for self- studies to master the course *:

The set of lectures on the course « Postharvest Management »

* The training toolkit for self- studies to master the course is placed on the course page in the university telecommunication training and information system under the set procedure.

DEVELOPERS:

position, department	name and surname
position, department	name and surname
position, department	name and surname

HEAD OF EDUCATIONAL DEPARTMENT:

name of department	name and surname
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**HEAD
OF HIGHER EDUCATION PROGRAMME:**

position, department	name and surname
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