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Информация о владельце:
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Должность: Ректор
Дата подписания: 10.09.2024 10:27:02
Уникальный программный ключ:
ca953a0120d891083f939673078ef1a989dae18a

**Federal State Autonomous Educational Institution of Higher Education
"Peoples' Friendship University of Russia named after Patrice Lumumba"
RUDN University**

Agrarian and Technological Institute

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

COURSE SYLLABUS

POST-HARVEST PROCESSING

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 AGRONOMY

higher education programme profile/specialisation
title

1. THE GOAL OF MASTERING THE DISCIPLINE

The discipline "Postharvest Management" is included in the master's program "General Agronomy" in the direction 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 for determining the quality of grain, vegetables and fruits, traditional and promising methods of processing and storing plant 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 plant products and the main technological processes in the flour-milling, baking and canning industries; acquisition of practical skills in organizing the process of processing plant products.

2. REQUIREMENTS TO THE RESULTS OF MASTERING THE DISCIPLINE

Mastering the discipline "Post-harvest processing" is aimed at developing the following competencies (parts of competencies) in students:

Table 2.1. List of competencies developed in students while mastering the discipline (results of mastering the discipline)

Cipher	Competence	Indicators of Competence Achievement (within the framework of this discipline)
UK-1	Able to carry out critical analysis of problematic situations based on a systems approach and develop a strategy actions	UK-1.2 Uses a systematic approach to solving assigned tasks;
UK-3	Able to organize and manage the work of a team, developing a team strategy to achieve the set goal	UK-3.1 Develops a cooperation strategy and, on its basis, organizes the team's work to achieve the set goal; UK-3.2 Plans teamwork, distributes assignments and delegates authority to team members, organizes discussion of different ideas and opinions;
OPK-1	Capable of solving problems of development of the field of professional activity and (or) organization based on the analysis of achievements of science and production	OPK-1.1 Demonstrates knowledge of the basic methods of analyzing the achievements of science and production 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 problems professional activity in agronomy;
OPK-5	Capable of carrying out feasibility studies of projects in professional activities	OPK-5.1 Has a command of 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 for improving project efficiency in agronomy;
OPK-6	Able to manage teams and organize production processes	OPK-6.1 Able to work with information systems and databases on personnel management issues; OPC-6.2 Defines the tasks of the personnel of the structural unit, based on the goals and strategy of the organization; OPC-6.3 Apply methods of managing interpersonal relationships, team building, leadership development and performance, identification of talents, determination job satisfaction;
	Able to determine directions	

PC-3	improvement and increasing efficiency technologies for growing crop products on based on scientific achievements, best practices domestic and foreign manufacturers	PC-3.1 Identifies promising areas for improvement efficiency of plant production; PC-3.2 Carries out operational regulation of the course of production of plant products;
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3. PLACE OF DISCIPLINE IN THE STRUCTURE OF EDUCATIONAL EDUCATION

The discipline "Post-harvest processing" is a mandatory part of block 1 "Disciplines (modules)" of the educational program of higher education.

As part of the higher education program, students also master other disciplines and/or practices that contribute to the achievement of the planned results of mastering the discipline "Post-harvest processing".

Table 3.1. List of components of the educational program of higher education that contribute to the achievement of the planned results of mastering the discipline

Cipher	Name of competence	Preceding courses/modules, practices*	Subsequent disciplines/modules, practices*
UK-3	Able to organize and manage the work of a team, developing a team strategy for achieving the set goal	<i>Management**;</i> <i>Marketing**;</i>	
UK-1	Capable of carrying out a critical analysis of problematic situations based on a systems approach and developing an action strategy	<i>Technological Training;</i> <i>Research work;</i> <i>Information Technology;</i> <i>Pests and Diseases;</i> <i>Soil Fertility Management;</i> <i>Crop Production;</i> <i>Management**;</i> <i>Marketing**;</i>	
OPK-6	Able to manage teams and organize production processes	<i>Technological Training;</i> <i>Management**;</i>	
OPK-1	Capable of solving problems of development of the field of professional activity and (or) organization based on the analysis of achievements of science and production	<i>Crop Production;</i> <i>Soil Fertility Management;</i> <i>Pests and Diseases;</i> <i>Information Technology;</i> <i>Research work;</i> <i>Technological Training;</i>	
OPK-5	Capable of carrying out feasibility studies of projects in professional activities	<i>Marketing**;</i> <i>Mechanization of Crop Production;</i>	

PC-3	Able to determine directions for improvement and increase in the efficiency of technologies for growing crop products based on scientific achievements, best practices of domestic and foreign manufacturers	<i>Research work; Technological Training; Crop Production; Breeding and Seed Production; Plant Protection;</i>	
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* - filled in accordance with the competency matrix and the SUP OP VO

** - elective disciplines/practices

4. SCOPE OF THE DISCIPLINE AND TYPES OF STUDY WORK

The total workload of the “Postharvest Management” discipline is 4 credits.

Table 4.1. Types of educational work by periods of mastering the educational program of higher education for full-time education.

Type of academic work	TOTAL,ac.h.		Semester(s)
			4
<i>Contact work, academic hours</i>	48		48
Lectures (LC)	24		24
Laboratory work (LW)	0		0
Practical/seminar classes (SZ)	24		24
<i>Independent work of students, academic hours</i>	86		86
<i>Control (exam/test with assessment), academic hours</i>	10		10
General complexity of the discipline	ac.h.	144	144
	credit.ed.	4	4

5. CONTENT OF THE DISCIPLINE

Table 5.1. Contents of the discipline (module) by types of academic work

Section number	Name of the discipline section	Section (Topic) Contents		Type of academic work*
Section 1	Basics of storage of plant products	1.1	Types of storage losses and factors causing them. Biosis, cenoanabiosis, abiosis, anabiosis and their varieties. Methods for reducing storage losses.	LK, SZ
Section 2	Standardization of plant products.	2.1	Standards and normative-technical documents, their categories. Methods of determining the quality of plant products. Standardization of grain and leguminous crops. Commercial qualities, standardization and certification fruits, vegetables and potatoes.	LK, SZ
Section 3	Storage of grain and seeds.	3.1	Storage of grain and seeds. Grain mass and its main components. Physical characteristics of grain mass. Biological properties of grain mass. Storage methods grain masses. Storage of vegetable seeds.	LK, SZ
		3.2	Standards of natural loss during grain storage. Natural loss as an essential component of grain mass loss during post-harvest processing and storage. Calculation of the coefficient of loss of natural loss of seed grain. Development of standards for natural loss of grain and seeds during storage in different macroclimatic regions. Instructions for the application of standards for natural loss of grain, grain products and seeds during storage. Procedure calculation of natural loss of grain and seeds	LK, SZ
Section 4	Basics of Bread Making	4.1	Nutritional value of bread. Methods of bread production. Baking properties of wheat and rye flour. Transportation and storage of bread. Diseases and defects of bread. Assortment of bakery products.	LK, SZ
Section 5	Methods of preserving fruit and vegetable raw materials.	5.1	Biochemical and chemical changes in plant materials during canning. Storage of raw materials and their preparation for canning. Production technology certain types of canned goods. Labeling, accounting and storage of finished products.	LK, SZ
Section 6	Raw material characteristics of grapes and basic requirements for their quality.	6.1	Microbiological and biochemical principles of winemaking. Basic technological schemes of grape processing. Classification and characteristics of different types of wine. Diseases, defects of wine materials and wines; their prevention and treatment. Technology production of non-alcoholic products from grape processing.	LK, SZ
Section 7	Tea and basic requirements for its quality	7.1	Raw materials for tea production Chemical composition of tea. Collection of tea leaves. Tea factories and classification of tea. Tea production technology. Marking and storage of finished products.	LK, SZ

* - filled in only for FULL-TIME education: LK – lectures; LR – laboratory work; PZ – practical/seminar classes.

6. LOGISTIC AND TECHNICAL SUPPORT OF DISCIPLINE

Table 6.1. Material and technical support of the discipline

Audience type	Equipping the auditorium	Specialized educational/laboratory equipment, software and materials for mastering the discipline (if necessary)
Lecture	An auditorium for conducting lecture-type classes, equipped with a set of specialized furniture; a board (screen) and technical means for multimedia presentations.	Specialized set furniture; technical equipment: EPSON EB-965 multimedia projector, laptop, Internet access. Software: Microsoft products (OS, office suite, including MS Office/Office 365, Teams, Skype)
Seminar	An auditorium for conducting seminar-type classes, group and individual consultations, ongoing monitoring and midterm assessment, equipped with a set of specialized furniture and technical means for multimedia presentations.	Specialized set furniture; technical equipment: EPSON EB-965 multimedia projector, laptop, Internet access. Software: Microsoft products (OS, office suite, including MS Office/Office 365, Teams, Skype)
For independent work	A classroom for independent work of students (can be used for conducting seminars and consultations), equipped with a set of specialized furniture and computers with access to the Electronic Information System.	

* - the audience for independent work of students MUST be indicated!

7. EDUCATIONAL, METHODOLOGICAL AND INFORMATIONAL SUPPORT OF THE DISCIPLINE

Main literature:

1. Glukhikh, M. A. Technology of storage and processing of plant products / 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. Plant growing: a teaching aid for students majoring in "Agronomy": in 3 parts. Part 1: Grain crops (I group of breads) / V.V. Vvedensky, A.N. Zharov, A.V. Vvedenskaya. - Electronic text data. - M.: RUDN, 2018. - 36 p.: ill. URL:

https://lib.rudn.ru/MegaPro/UserEntry?Action=Link_FindDoc&id=470256&idb=0

Further reading:

1. L. A. Trisvyatsky, B. V. Lesik, V. N. Kurdina. Storage and technology agricultural products. Moscow: Kolos, 1983. 340 p.

2. N. E. Kucherenko Workshop on storage and processing technology agricultural products. Moscow: Moscow Agricultural Academy Publishing House, 1991. 140 p.

Resources of the information and telecommunications network "Internet":

1. RUDN University EBS and third-party EBSs to which university students have access

based on concluded agreements

- Electronic library system of RUDN - ELS RUDN

<http://lib.rudn.ru/MegaPro/Web>

- Electronic library system "University library online" <http://www.biblioclub.ru>

- EBS Yurait <http://www.biblio-online.ru>

- Electronic Library System "Student Consultant" www.studentlibrary.ru

- Electronic library system "Troitsky Bridge"

2. Databases and search engines

- electronic fund of legal and normative-technical documentation

<http://docs.cntd.ru/>

- Yandex search engine <https://www.yandex.ru/>

- Google search engine <https://www.google.ru/>

- SCOPUS abstract database

<http://www.elsevierscience.ru/products/scopus/>

Educational and methodological materials for independent work of students mastering the discipline/module:*

1. Lecture course on the subject "Post-harvest processing".

* - all educational and methodological materials for independent work of students are posted in accordance with the current procedure on the discipline page in TUIS!

8. EVALUATION MATERIALS AND SCORE-RATING SYSTEM FOR ASSESSING THE LEVEL OF DEVELOPMENT OF COMPETENCES IN THE DISCIPLINE

Evaluation materials And point-rating system*
assessments level formation of competencies (part of competencies) based
on the results of mastering the discipline

"Post-harvest processing" is presented in the Appendix to this Work Program of the discipline.

* - OM and BRS are formed on the basis of the requirements of the relevant local regulatory act of RUDN.

DEVELOPER:

Associate Professor of the
Department of Agrobiotechnology

Position, BUP

Signature

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Surname I.O.

HEAD OF THE BUP:

Director of the agrobiotechnology
department

Position of the BUP

Signature

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