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

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

COURSE SYLLABUS

PLANT PROTECTION

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. COURSE GOAL(s)

The course "Plant Protection" is part of the Master's programme "General Agriculture" in the field of study 35.04.04 "Agronomy" and is studied in the 3rd semester of the 2nd year. The discipline is implemented by the Agrobiotechnology Department.

The course aims to:

1. Address the development of students' awareness in pest and disease management in agriculture and understanding of integrated plant protection systems;
2. Familiarize students with the theoretical background, terminology, and concepts of plant protection methods (agrotechnical, biological, chemical, physical-mechanical, and quarantine measures);
3. Deepen students' knowledge in identifying phytopathogenic complexes on various agricultural crops and selecting appropriate protective measures;
4. Enhance students' skills in developing modern systems of protective measures against pests and diseases through practical tasks and case studies.

This subject provides advanced study of integrated plant protection strategies and technologies for their implementation in agricultural production.

2. REQUIREMENTS FOR LEARNING OUTCOMES

Mastering the course "Plant Protection" is aimed at the development of the following competences (or parts thereof) in 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-7	Ability to search for necessary information sources and data, perceive, analyze, memorize, and transmit information using digital tools, as well as using algorithms when working with data from various sources to effectively use the obtained information for problem-solving; able to evaluate information and its reliability, and build logical conclusions based on incoming information and data	GC-7.1 Evaluates information and its reliability, builds logical conclusions based on incoming information and data;
		GC-7.2 Has practical experience in searching, perceiving, storing, analyzing, and transmitting information and data using digital tools, algorithms, and application software to solve assigned tasks;
GPC-7	Ability to use tools for working with large arrays of structured and unstructured information; use modern digital methods for processing, analyzing, interpreting, and visualizing data to solve assigned tasks in professional and research activities in the field of	GPC-7.1 Masters tools for working with large arrays of structured and unstructured information;
		GPC-7.2 Uses modern digital methods for processing, analyzing, interpreting, and visualizing data to solve assigned tasks;

Competence code	Competence descriptor	Competence formation indicators (within this course)
	agronomy	
PC-1	Ability to organize experiments (field trials) to assess the effectiveness of innovative technologies (technology elements), varieties, and hybrids under production conditions	PC-1.1 Develops a research program to study the effectiveness of innovative technologies (technology elements), varieties, and hybrids; develops methodologies for conducting experiments; masters new research methods;
PC-2	Ability to develop and implement environmentally safe practices and technologies for producing high-quality crop production, taking into account the properties of agro-landscapes and economic efficiency	PC-2.2 Organizes quality control and safety assurance of crop production;
PC-3	Ability to identify directions for improving and increasing the efficiency of crop production technologies based on scientific achievements and best practices of domestic and foreign producers	PC-3.2 Carries out operational regulation of crop production processes;
PC-4	Ability to create models of cultivation technologies for agricultural crops, plant protection systems, and varieties	PC-4.1 Creates models of cultivation technologies for agricultural crops, plant protection systems, and varieties;

3.COURSE IN HIGHER EDUCATION PROGRAMME STRUCTURE

The course refers to the **core** component of Block 1 "Disciplines (Modules)" of the higher educational programme curriculum.

Within the higher education programme, students also master other disciplines and/or internships that contribute to the achievement of the expected learning outcomes as results of the course study.

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-7	Ability to search for necessary information sources and data, perceive, analyze, memorize, and transmit	Information Technology; Pests and Diseases; Information Databases; Soil Fertility Management; Scientific Research Work	Soil Fertility Management; Scientific Research Work; Undergraduate Practice / Pre-graduation Practice

Competence code	Competence descriptor	Previous courses/modules*	Subsequent courses/modules*
	information using digital tools, as well as using algorithms when working with data from various sources to effectively use the obtained information for problem-solving; able to evaluate information and its reliability, and build logical conclusions based on incoming information and data		
GPC-7	Ability to use tools for working with large arrays of structured and unstructured information; use modern digital methods for processing, analyzing, interpreting, and visualizing data to solve assigned tasks in professional and research activities in the field of agronomy	Scientific Research Work; Technological Training; Information Technology; Pests and Diseases	Scientific Research Work; Undergraduate Practice / Pre-graduation Practice
PC-1	Ability to organize experiments (field trials) to assess the effectiveness of innovative technologies (technology elements), varieties, and hybrids under production conditions	Information Technology; Crop Production; Mechanization of Crop Production; Pests and Diseases; Soil Fertility Management; Scientific Research Work; Technological Training	Scientific Research Work; Undergraduate Practice / Pre-graduation Practice; Crop Production; Breeding and Seed Production; Soil Fertility Management
PC-2	Ability to develop and implement environmentally safe practices and technologies for producing high-quality crop production, taking into account the properties of agro-landscapes and economic efficiency	Technological Training; Scientific Research Work; Crop Production; Pests and Diseases	Scientific Research Work; Crop Production; Breeding and Seed Production

Competence code	Competence descriptor	Previous courses/modules*	Subsequent courses/modules*
PC-3	Ability to identify directions for improving and increasing the efficiency of crop production technologies based on scientific achievements and best practices of domestic and foreign producers	Crop Production; Scientific Research Work; Technological Training	Crop Production; Postharvest Management; Breeding and Seed Production; Scientific Research Work
PC-4	Ability to create models of cultivation technologies for agricultural crops, plant protection systems, and varieties	Scientific Research Work; Crop Production	Scientific Research Work; Undergraduate Practice / Pre-graduation Practice; Crop Production; Breeding and Seed Production

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

4. COURSE WORKLOAD AND ACADEMIC ACTIVITIES

The total workload of the course "Plant Protection" amounts to **5 credits (180 academic hours)**.

*Table 4.1. Types of academic activities during the periods of higher education programme mastering (**full-time training**)**

Type of academic activities	Total academic hours	Semesters/training modules
		1
<i>Contact academic hours</i>	85	85
including:		
Lectures (LC)	34	34
Lab work (LW)	0	0
Seminars (workshops/tutorials) (S)	51	51
<i>Self-studies</i>	77	77
<i>Evaluation and assessment (exam/passing/failing grade)</i>	18	18
Course workload	academic hours	180
	credits	5

* To be filled in regarding the higher education programme correspondence training mode.

5. COURSE CONTENTS

Table 5.1. Course contents and academic activities types

Course module title	Course module contents (topics)	Academic activities types
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Course module title	Course module contents (topics)	Academic activities types
Module 1: Phytopathogenic complex on various agricultural crops	Topic 1.1. Damage to agricultural crops by a complex of pests and diseases	LC, S
Module 2: Main methods of plant protection Combination of various protection methods; preventive and eradication measures	Topic 2.1. Advantages and disadvantages of individual plant protection methods	LC, S
Module 3: Agrotechnical method of plant protection	Topic 3.1. Advantages and disadvantages of the agrotechnical protection method	LC, S
Module 4: Physical and mechanical methods of plant protection	Topic 4.1. Advantages and disadvantages of physical and mechanical protection methods	LC, S
Module 5: Quarantine	Topic 5.1. Quarantine as a plant protection method; quarantine measures, quarantine diseases, pests, and weeds	LC, S
Module 6: Biological method of plant protection	Topic 6.1. Advantages and disadvantages of the biological protection method	LC, S
Module 7: Chemical method of plant protection	Topic 7.1. Advantages and disadvantages of the chemical protection method	LC, S
	Topic 7.2. Purpose, nature of action, formulation types, methods of preparation and application of working solutions, compatibility of preparations from various groups	LC, S
	Topic 7.3. Safety measures when using chemical plant protection 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	A lecture hall for lecture-type classes, equipped with a set of specialised furniture; board (screen) and technical means of multimedia presentations.	Set of specialised furniture; technical facilities: EPSON EB-965 multimedia projector, Laptop, internet access. Software: Microsoft products (OS, office applications package, including MS Office/Office 365, Teams, Skype)

Type of academic activities	Classroom equipment	Specialised educational / laboratory equipment, software, and materials for course study (if necessary)
Lab work	A classroom for laboratory work, individual consultations, current and mid-term assessment; equipped with a set of specialised furniture and machinery.	List of specialised laboratory equipment, machinery, stands, etc.
Seminar	A classroom for laboratory work, individual consultations, current and mid-term assessment; equipped with a set of specialised furniture and machinery.	List of specialised equipment, stands, visual posters, etc.
Computer Lab	A classroom for conducting classes, group and individual consultations, current and mid-term assessment, equipped with personal computers (in the amount of ___ pcs), a board (screen) and technical means of multimedia presentations.	Set of specialised furniture, MIKMED-5 binocular medical microscope, microscopic preparations. Technical facilities: interactive whiteboard
Seminar	A classroom for conducting seminars, group and individual consultations, current and mid-term assessment; equipped with a set of specialised furniture and technical means for multimedia presentations.	
Self-studies	A classroom for independent work of students (can be used for seminars and consultations), equipped with a set of specialised furniture and 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. Integrated Plant Protection / T. V. Dolzhenko, L. E. Kolesnikov, A. G. Semenova [et al.]. — 3rd ed., ster. — Saint Petersburg: Lan, 2024. — 120 p. — ISBN 978-5-507-47304-5. — Electronic text // Lan: electronic library system. — URL: <https://e.lanbook.com/book/359825>

2. Shternshis, M. V. Biological Plant Protection: textbook for higher education institutions / M. V. Shternshis, I. V. Andreeva, O. G. Tomilova. — 7th ed., ster. — Saint Petersburg: Lan, 2024. — 332 p. — ISBN 978-5-507-49266-4. — Electronic text // Lan: electronic library system. — URL: <https://e.lanbook.com/book/384752>

Additional readings:

1. Zykin, A. V. English for Agricultural Universities. Plant Protection and Quarantine, Entomology, Phytopathology / A. V. Zykin, N. G. Kovalenko. — Saint Petersburg: Lan, 2023. — 144 p. — ISBN 978-5-507-45410-5. — Electronic text // Lan: electronic library system. — URL: <https://e.lanbook.com/book/302420>

2. Biological Plant Protection against Stress: textbook for higher education institutions / L. Z. Karimova, V. A. Kolesar, R. I. Safin, G. K. Khuzina. — 3rd ed., ster. —

Saint Petersburg: Lan, 2024. — 100 p. — ISBN 978-5-507-49137-7. — Electronic text // Lan: electronic library system. — URL: <https://e.lanbook.com/book/379346>

Internet sources

1. **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): <https://mega.rudn.ru/MegaPro/Web>
 - EL "University Library Online": <http://www.biblioclub.ru>
 - EL "Yurait": <http://www.biblio-online.ru>
 - EL "Student Consultant": www.studentlibrary.ru
 - EL "Znanium": <https://znanium.ru/>
2. **Databases and search engines:**
 - Sage: <https://journals.sagepub.com/>
 - Springer Nature Link: <https://link.springer.com/>
 - Wiley Journal Database: <https://onlinelibrary.wiley.com/>
 - Bibliometric database Lens.org: <https://www.lens.org>

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

1. The set of lectures on the course "Plant Protection".

* 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:

Professor, Agrobiotechnology Department

Pakina E. N.

position, department

name and surname

HEAD OF EDUCATIONAL DEPARTMENT:

Director, Agrobiotechnology Department

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**HEAD
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