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**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

PESTS AND DISEASES OF PLANT

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 "Pests and Diseases" is included in the master's program "General Agronomy" in the direction 35.04.04 "Agronomy" and is studied in semesters 2, 3 of the 1st and 2nd years. The discipline is implemented by the Agrobiotechnology Department. The discipline consists of 6 sections and 17 topics and is aimed at studying the structure and biology of harmful entomofauna, its role in agriculture, the main groups of pathogens and the features of their pathogenesis.

The purpose of mastering the discipline is to obtain basic knowledge about the morphology, physiology, anatomy of insects. The roles of insects in nature and human economic activity. Study of classical and newest methods of insect population control. The main types of phytopathogens, features of their development and interaction with the host plant, symptoms of plant diseases. Formation of skills in practical application of the acquired knowledge.

2. REQUIREMENTS TO THE RESULTS OF MASTERING THE DISCIPLINE

Mastering the discipline "Pests and Plant Diseases" 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-1.1 Performs a search for the necessary information, its critical analysis and generalizes the results of the analysis to solve the assigned task; UK-1.2 Uses a systematic approach to solving assigned tasks;
UK-7	Able to search for the necessary sources of information and data, perceive, analyze, remember and transmit information using digital means, as well as using algorithms when working with data obtained from various sources in order to effectively use the information received to solve problems, evaluate information, its reliability, build logical conclusions based on incoming data information and data	UK-7.1 Conducts an assessment of information, its reliability, builds logical conclusions based on incoming information and data; UK-7.2 Has practical experience in searching, perceiving, storing, analyzing, transmitting information and data using digital tools, algorithms and application programs in order to solve assigned tasks;
OPK-1	Capable of solving problems of development of the field of professional activity and (or) organization based on the analysis of scientific achievements and production	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 Applies available technologies, including information and communication technologies, to solve problems of professional activity in agronomy;
OPK-7	Able to master the tools for working with	OPK-7.2 Uses modern digital methods of processing, analysis, interpretation and visualization of data with

Cipher	Competence	Indicators of Competence Achievement (within the framework of this discipline)
	large arrays of structured and unstructured information, use modern digital methods of processing, analysis, interpretation and visualization of data in order to solve the tasks of professional and scientific research activities in the field of agronomy	the purpose of solving the assigned tasks;
PC-1	Capable of organizing experiments (field trials) to assess the effectiveness of innovative technologies (elements of technology), varieties and hybrids in production conditions	PC-1.1 Draws up a research program to study the effectiveness of innovative technologies (elements of technology), varieties and hybrids, develops methods for conducting experiments, masters new research methods;
PC-2	Capable of developing and implementing environmentally friendly methods and technologies for the production of high-quality plant products, taking into account the properties of agricultural landscapes and economic efficiency	PC-2.2 Organizes quality control and safety of plant products;

3. PLACE OF DISCIPLINE IN THE STRUCTURE OF EDUCATIONAL EDUCATION

The discipline "Pests and Plant Diseases" is a compulsory 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 "Pests and diseases of plants".

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-7	Able to search for the necessary sources of information and data, perceive, analyze, remember and transmit information using digital means, as well as using algorithms when working with data obtained from various sources in order to effectively using the information obtained to make decisions	Information Technology; Soil Fertility Management; Research work;	Soil Fertility Management; Research work; Undergraduate practice / Pre-graduation practice;

Cipher	Name of competence	Preceding courses/modules, practices*	Subsequent disciplines/modules, practices*
	tasks, to evaluate information, its reliability, to build logical conclusions based on incoming information and data		
UK-1	Capable of carrying out a critical analysis of problematic situations based on a systems approach and developing an action strategy	Research work; Information Technology; Soil Fertility Management; Crop Production; Management**; Marketing**;	Soil Fertility Management; Postharvest Management; Crop Production; Undergraduate practice; Research work;
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	Research work; Crop Production; Soil Fertility Management; Information Technology;	Crop Production; Postharvest Management; Soil Fertility Management; Research work; Undergraduate practice / Pre-graduation practice;
OPK-7	Able to master the tools for working with large arrays of structured and unstructured information, use modern digital methods of processing, analysis, interpretation and visualization of data in order to solve the tasks of professional and research activities in the field agronomy	Research work; Information Technology;	Research work; Undergraduate practice / Pre-graduation practice;
PC-1	Capable of organizing experiments (field trials) to assess the effectiveness of innovative technologies (elements of technology), varieties and hybrids under production conditions	Research work; Information Technology; Crop Production; Mechanization of Crop Production; Soil Fertility Management;	Research work; Undergraduate practice / Pre-graduate practice; Crop Production; Breeding and Seed Production; Soil Fertility Management;
PC-2	Capable of developing and implementing environmentally friendly methods and technologies for the production of high-quality crop products, taking into account the properties of agricultural landscapes and economic efficiency	Crop Production; Research work;	Crop Production; Breeding and Seed Production; Research work;

* - filled in 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 discipline “Pests and Diseases” is “7” credit units.

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)	
			2	3
<i>Contact work, academic hours</i>	116		48	68
Lectures (LC)	58		24	34
Laboratory work (LW)	0		0	0
Practical/seminar classes (SZ)	58		24	34
<i>Independent work of students, academic hours</i>	90		50	40
<i>Control (exam/test with assessment), academic hours</i>	46		10	36
General complexity of the discipline	ac.h.	252	108	144
	credit. ed.	7	3	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	General Entomology	1.1	Subject and history of entomology	LK, SZ
Section 2	Agricultural entomology	2.1	Subject and history of entomology	LK, SZ
		2.2	General plan of the structure of insects	LK, SZ
		2.3	Anatomy and Physiology of Insects	LK, SZ
		2.4	Lower insects and insects with incomplete metamorphosis. General characteristics of the orders	LK, SZ
		2.5	Insects with complete metamorphosis. General characteristics of the orders	LK, SZ
Section 3	General Phytopathology	3.1	Viruses and viroids as pathogens plants. Viruses of agricultural crops	LK, SZ
		3.2	Bacteria as pathogens of plants. Bacterioses of agricultural crops	LK, SZ
		3.3	Lower fungi as pathogens of plants	LK, SZ
Section 4	Agricultural phytopathology	4.1	Higher fungi as pathogens of plants. Mycoses of agricultural crops	LK, SZ
		4.2	Diseases of grain and leguminous crops	LK, SZ
		4.3	Diseases of vegetable and fruit crops	LK, SZ
Section 5	Control methods	5.1	Methods of diagnostics of fungal, bacterial and viral diseases of plants	LK, SZ
		5.2	Methods of combating plant diseases	LK, SZ
		5.3	Methods of plant pest control	LK, SZ
Section 6	Methodological section	6.1	Working with the determinant	LK, SZ
		6.2	Working with electronic databases	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: Interactive complex - interactive board Triumph Board with Optoma projector
Seminar	An auditorium for conducting seminar-type classes, group and individual consultations, ongoing monitoring and midterm assessment, equipped with a set of	Specialized set furniture, binocular medical microscope MIKMED-

Audience type	Equipping the auditorium	Specialized educational/laboratory equipment, software and materials for mastering the discipline (if necessary)
	specialized furniture and technical means for multimedia presentations.	5, microscopic preparations. Technical means: interactive board
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 EIS.	

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

7. EDUCATIONAL, METHODOLOGICAL AND INFORMATIONAL SUPPORT OF THE DISCIPLINE

Main literature:

1. Osmolovsky Grigory Evseevich. Entomology / G.E. Osmolovsky, N.V. Bondarenko. - 3rd ed., reprinted; Electronic text data. - St. Petersburg: Quadro, 2020. - 360 p.: ill. - (Textbooks and teaching aids for higher agricultural educational institutions). URL: https://lib.rudn.ru/MegaPro/UserEntry?Action=Link_FindDoc&id=487754&idb=0

Further reading:

1. Zykin, A. V. English for agricultural universities. Plant protection and quarantine, entomology, phytopathology / A. V. Zykin, N. G. Kovalenko. - St. Petersburg: Lan, 2023. - 144 p. - ISBN 978-5-507-45410-5. - Text: electronic // Lan: electronic library system. - URL: <https://e.lanbook.com/book/302420> (date of access: 12.03.2024). — Access mode: for authorized users.

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 "Pests and diseases of plants".

* - 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. ASSESSMENT TOOLKIT AND GRADING SYSTEM* FOR EVALUATION OF STUDENTS' COMPETENCES LEVEL UPON COURSE COMPLETION

The assessment toolkit and the grading system* to evaluate the competences formation level (competences in part) upon the course study completion are specified in the Appendix to the course syllabus.

* The assessment toolkit and the grading system are formed on the basis of the requirements of the relevant local normative act of RUDN University (regulations / order).

DEVELOPER:

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Agrobiotechnology

Position, BUP

Signature

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Surname I.O.

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Director of the agrobiotechnology
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