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ФИО: Ястребов Олег Александрович  
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**Federal State Autonomous Educational Institution of Higher Education**  
**PEOPLES' FRIENDSHIP UNIVERSITY OF RUSSIA**  
**NAMED AFTER PATRICE LUMUMBA**  
**RUDN University**

**Agrarian-Technological Institute**

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

## **COURSE SYLLABUS**

### **Organization of integrated plant protection systems**

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course title

**Recommended by the Didactic Council for the Education Field of:**

**35.04.04 Agronomy**

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field of studies / speciality code and title

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

**Integrated Plant Protection**

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higher education programme profile/specialisation title

## 1. THE PURPOSE OF MASTERING THE DISCIPLINE

The purpose of mastering the discipline "Organization of integrated plant protection systems" is to build a modern system of integrated plant protection and the technology of its implementation.

## 2. REQUIREMENTS FOR THE RESULTS OF MASTERING THE DISCIPLINE

Mastering the discipline "Organization of integrated plant protection systems" is aimed at the formation of the following competencies (part of the competencies) among students:

*Table 1 - The list of competencies formed by students during the development of the discipline (the results of mastering the discipline)*

<b>Code</b>	<b>Competence</b>	<b>Competency Achievement Indicators</b>
UK-1	Able to carry out search, critical analysis of problem situations on the basis of a systematic approach, to develop an action strategy	UK-1.1 Performs the search for the necessary information, its critical analysis and summarizes the results of the analysis to solve the task
		UK-1.3 Develops a strategy for achieving the set goal as a sequence of steps, anticipating the result of each of them and assessing their impact on the external environment of the planned activity and on the relationships of the participants in this activity
UK-2	Able to manage the project at all stages of its life cycle	UK-2.1 Develops the concept of the project within the framework of the designated problem, formulating the goal, objectives, relevance, significance (scientific, practical, methodological and other depending on the type of project), expected results and possible areas of their application.
		UK-2.2 Forms a schedule for the implementation of the project as a whole and a plan for monitoring its implementation, organizes and coordinates the work of project participants
		UK-2.3 Offers possible ways (algorithms) of implementation of the project results into practice (or implements it)
OPK-1	Able to solve the problems of development of the field of professional activity and (or) organization on the basis of analysis of the achievements of science and production	OPK-1.2 Uses methods of solving problems in the development of agronomy 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 the problems of professional activity in agronomy

AboutPC-3	Able to use modern methods of problem solving in the development of new technologies in professional activities	OPK-3.1 Analyzes methods and methods of solving problems in the development of new technologies in agronomy
AboutPK-4	Able to conduct research, analyze results and prepare reporting documents	OPK-4.2 Uses information resources, scientific, experimental and instrumental base for research in agronomy
		OPK-4.3 Formulates the results obtained in the course of solving research problems
AboutPC-5	Able to carry out feasibility studies of projects in professional activities	OPK-5.1 Owns the 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
PK-1	Able to collect, process, analyze and systematize scientific and technical information, domestic and foreign experience in the field of agronomy	PC-1.1 Performs critical analysis of the information received
PK-2	Able to develop methods of conducting experiments, master new research methods	PK-2.1 Develops methods for conducting experiments
		PP-2.2 Applies modern types and methods of observation and accounting in field experiments
PK-3	Able to organize, conduct and analyze the results of experiments (field experiments)	PP-3.2 Organizes field experiments to assess the effectiveness of innovative technologies in production conditions
PK-4	Able to create models of crop cultivation technologies, plant protection systems, varieties	PC-4.2 Able to distinguish the main and secondary components of models in order to accelerate their development
		PP-4.3 Implements the creation of plant protection systems for specific production conditions
		PP-4.4 Has the skills to organize work on plant protection, adapted to the soil and climatic conditions of the region
PK-6	Able to consult on innovative technologies in agronomy	PP-6.2 Able to aggregate the need to use plant protection technologies for accelerated development of agricultural enterprises

### 3. THE PLACE OF DISCIPLINE IN THE STRUCTURE OF THE OP VO

The discipline "Organization of integrated plant protection systems" refers to the mandatory part of the block B1.O.02.03.

Within the framework of the EP HE, students also master other disciplines and / or practices that contribute to the achievement of the planned results of the development of the discipline "Organization of Integrated Plant Protection Systems".

*Table 2 – List of components of the EP HE that contribute to the achievement of the planned results of the discipline*

<b>Code</b>	<b>Competence</b>	<b>Previous disciplines/modules, practices</b>	<b>Subsequent disciplines/modules , practices</b>
UK-1	Able to carry out search, critical analysis of problem situations on the basis of a systematic approach, to develop an action strategy	Information Technologies Phytopathology risk analysis History and methodology of scientific agronomy Research Practice	Work with scientific literature Pre-diploma practice Biotechnology in plant protection
UK-2	Able to manage the project at all stages of its life cycle	Biological method of plant protection Bacterial diseases Research Practice	Biotechnology in plant protection Pre-diploma practice
OPK-1	Able to solve the problems of development of the field of professional activity and (or) organization on the basis of analysis of the achievements of science and production	Biological method of plant protection Bacterial diseases Biology of weedy vegetation Molecular methods for diagnosing phytopathogens Phytopathology risk analysis Research Practice	Plant immunity Biotechnology in plant protection Research Practice Pre-diploma practice Plant quarantine Pre-diploma practice
AboutPC-3	Able to use modern methods of problem solving in the development of new technologies in professional activities	Research Practice	Pre-diploma practice
AboutPK-4	Able to conduct research, analyze results and prepare reporting documents	Biological method of plant protection Bacterial diseases Biology of weedy vegetation Molecular methods for diagnosing phytopathogens Phytopathology risk analysis Research Practice	Plant immunity Virology Biotechnology in plant protection Plant quarantine Pre-diploma practice Work with scientific literature
AboutPC-5	Able to carry out feasibility studies of projects in professional activities	Biological method of plant protection	Management & Marketing

PK-1	Able to collect, process, analyze and systematize scientific and technical information, domestic and foreign experience in the field of agronomy	History and methodology of scientific agronomy Phytosanitary risk analysis Research Practice	Plant immunity Biotechnology in plant protection Plant quarantine Research work Pre-diploma practice
PK-2	Able to develop methods of conducting experiments, master new research methods	Molecular methods for diagnosing phytopathogens Biological method of plant protection Research Practice	Plant immunity Biotechnology in plant protection Plant quarantine Research work Pre-diploma practice
PK-3	Able to organize, conduct and analyze the results of experiments (field experiments)	Biological method of plant protection Research Practice	
PK-4	Able to create models of crop cultivation technologies, plant protection systems, varieties	Biological method of plant protection Research Practice	Plant immunity
PK-6	Able to consult on innovative technologies in agronomy	Biological method of plant protection Research Practice	

#### 4. THE SCOPE OF DISCIPLINE AND TYPES OF EDUCATIONAL WORK

The total labor intensity of the discipline "Organization of integrated plant protection systems" is 3 credit units for full-time and part-time forms of education, 4 credit units for full-time education.

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

Type of educational work		Total, aca. hrs.	Semester
			3
<i>Contact work</i>		51	51
including:			
Lectures (LC)		17	17
Laboratory works (LR)		–	–
Practical/Seminar Classes (FPs)		34	34
<i>Independent work of students</i>		33	33
<i>Control (exam/test with grade)</i>		24	24
Overall labor intensity of the discipline	aca. hrs.	108	108
	Zach. Units.	3	3

#### 5. CONTENTS

Table 6 – Content of the discipline (module) by types of educational work

Name of the discipline section	Contents	Type of educational work
Section 1. The concept of integrated plant protection, the main goals and objectives	Topic 1.1. Theoretical foundations of integrated plant protection. The relationship between plants and phytophages. Climatic factors, edaphic background, anthropogenic factors.	NW, LC

	Topic 2.1. Intra- and interpopulation relations, their dynamics depending on the factors of the external environment and human economic activity.	
Section 2. Phytopathogenic complex on various crops	Topic 2.2 Species composition of pests, diseases and weeds on major crops; the nature of the damage.	NW, LC
Section 3. Specificity of agroecosystems	Topic 3.1. Change in the importance of individual environmental factors in the vital activity of phytopathogens. The main regularities of the formation of harmful entomofauna. Directions of adaptation of harmful organisms to environmental conditions.	NW, LC
Section 4. Dynamics of populations of harmful organisms	Topic 4.1. Factors dependent and independent of density. The main phases in the development of populations of pests and diseases.	NW, LC
Section 5. Basic methods of plant protection	Topic 5.1. Agrotechnical method, physical and mechanical methods, resistant varieties, biological method, chemical method, quarantine.	NW, LC
	Topic 5.2. The choice of the method and method of protection, the integrated use of various methods on individual crops.	
Section 6. Economic malware thresholds	Topic 6.1. Harmfulness of phytophages. Methods of its assessment, the use of EPV and integrated plant protection.	NW, LC

## 6. MATERIAL AND TECHNICAL SUPPORT OF DISCIPLINE

*Table 7 – Discipline Logistics*

<b>Audience type</b>	<b>Equipping the classroom</b>	<b>Specialized educational/laboratory equipment, software and materials for mastering the discipline</b>
Lecture Hall	Auditorium for lecture-type classes, equipped with a set of specialized furniture; whiteboard (screen) and technical means of multimedia presentations.	
Seminary	An auditorium for seminar-type classes, group and individual consultations, current control and intermediate certification, equipped with a set of specialized furniture and technical means of multimedia presentations.	
For independent work of students	An auditorium for independent work of students (can be used for seminars and consultations), equipped with a set of specialized furniture and computers with access to EIOS.	

## 7. EDUCATIONAL, METHODOLOGICAL AND INFORMATION SUPPORT OF THE DISCIPLINE

### *Main literature:*

1. Chulkina V.A. et al. Ecological foundations of integrated plant protection, M.: Kolos, 568p.
2. Fadeev Yu.N., Novozhilov K.V. Integrated plant protection, M.: Kolos, 1991.355p.

### *Further reading:*

1. Protection of plants from diseases. Under the joy. Shkalikova V.A., Moscow. Kolos Publishing House, 2001
2. Protection of plants from pests. Pod rad. Isaicheva V.V., Moscow. Izd-vo «Kolos», 2001

### *Resources of the information and telecommunication network "Internet":*

1. RUDN University EBS and third-party EBS, to which university students have access on the basis of concluded contracts:

- Electronic library system RUDN University – EBS RUDN University <http://lib.rudn.ru/MegaPro/Web>
- EBS "University Library Online" <http://www.biblioclub.ru>
- EBS Jurait <http://www.biblio-online.ru>
- EBS "Student Consultant" [www.studentlibrary.ru](http://www.studentlibrary.ru)
- EBS "Lan" <http://e.lanbook.com/>
- EBS "Trinity Bridge"

2. Databases and search engines:

- – electronic fund of legal and normative-technical documentation of the <http://docs.cntd.ru/>
- – Yandex <https://www.yandex.ru/> search engine
- – Google search engine <https://www.google.ru/>
- – abstract database SCOPUS <http://www.elsevierscience.ru/products/scopus/>
- <http://quakes.globalincidentmap.com/>,
- <http://www.globalincidentmap.com/>,
- [http://earthquake.usgs.gov/earthquakes/recenteqsww/Quakes/quakes\\_all.php](http://earthquake.usgs.gov/earthquakes/recenteqsww/Quakes/quakes_all.php),
- [http://www.thesis.lebedev.ru/forecast\\_activity.html](http://www.thesis.lebedev.ru/forecast_activity.html)
- National digital resource "RUKONT": <http://rucont.ru>
- IQlib: <http://www.iqlib.ru>
- ScienceDirect: <http://www.sciencedirect.com>
- EBSCO: <http://search.ebscohost.com>
- Sage Publications: <http://online.sagepub.com>
- Springer/Kluwer: <http://www.springerlink.com>
- Taylor & Francis: <http://www.informaworld.com>
- Web of Science: <http://www.isiknowledge.com>
- University Information System RUSSIA: <http://www.cir.ru/index.jsp>
- <Http://www.studmedlib.ru> Student Advisor
- IQlib: <http://www.iqlib.ru>

*Educational and methodical materials for independent work of students in the development of the discipline / module:*

1. A course of lectures on the discipline "Organization of integrated plant protection systems".
2. Guidelines for the implementation and design of the course work / project on the discipline "Organization of integrated plant protection systems" (if there is a CD / CP).
  - Protection of plants from diseases. Under the joy. Shkalikova V.A., Moscow. Kolos Publishing House, 2001
  - Protection of plants from pests. Under the joy. Isaicheva V.V., Moscow. Kolos Publishing House, 2001

## 8. EVALUATION MATERIALS AND POINT-RATING SYSTEM FOR ASSESSING THE LEVEL OF FORMATION OF COMPETENCIES IN THE DISCIPLINE

Assessment materials and a point-rating system\* for assessing the level of formation of competencies (part of competencies) based on the results of mastering the discipline " Organization of integrated plant protection systems " are presented in the Appendix to this Work Program of the discipline.

**DEVELOPERS:**

Associate Professor of agrobiotechnology department _____ (position, BCD)	_____ (Signed)	<u>E.N.Pakina.</u> (Surname: F.I.)
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Director of Agrobiotechnology Department _____ (position, BCD)	_____ (Signed)	<u>E.N.Pakina</u> (Surname: F.I.)
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**HEAD OF EP HE:**

Director of Agrobiotechnology Department _____ (position, BCD)	_____ (Signed)	<u>E.N.Pakina</u> (Surname: F.I.)
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