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**Federal State Autonomous Educational Institution of Higher Education**

**PEOPLES' FRIENDSHIP UNIVERSITY OF RUSSIA**

**NAMED AFTER PATRICE LUMUMBA (RUDN University)**

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**Agrarian and Technological Institute**

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

**COURSE SYLLABUS**

Phytopathology and Plant Protection

course title

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

35.03.09 Landscape architecture

Management and design of urban green infrastructure

field of studies / speciality code and title

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

Landscape architecture

higher education programme profile/specialisation title

## 1. COURSE GOAL(s)

Goal is to obtain basic theoretical knowledge and practical skills in phytopathology and plant protection to study of theoretical and practical basis for detection of different plant diseases; to study of modern plant protection technology and combinative application of different protective measures; for fundamental and practical acquisition for pests, diseases and weed control.

## 2. REQUIREMENTS FOR LEARNING OUTCOMES

The course is designed for students to acquire following competences:

*Table 2.1. List of competences that students acquire during the course*

<b>Competence code</b>	<b>Competence descriptor</b>	<b>Competence formation indicators (within this course)</b>
GK-1	Student is able to search, critically analyze problem situations on the basis of a systematic approach, to develop a strategy of action.	GK-1.1 Student is able apply systematization to solve tasks; GK-1.2 Student is able search and analyze information.
GK-3	Student is able to organize and lead a team, developing a team strategy to achieve the goal.	GK-3.1 Student is able organize team work on the project; GK-3.2 Student is able interact with the executive authorities to coordinate all stages of the project.
GK-4	Student is able to use modern communication technologies in the state language of the Russian Federation and foreign language(s) for academic and professional interaction.	GK-4.1 Student is able prepare all necessary project documentation in Russian and foreign languages; GK-4.2 Student is able communicate on the project in Russian and foreign languages;
GK-5	Student is able to analyze and take into account the diversity of cultures in the process of intercultural interaction.	GK-5.1 Student is able understand the features of the social organization of society, the specifics of the mentality and worldview of the cultures of the West and East; GK-5.2 Student is able overcome the cultural barrier, perceiving intercultural differences.
GK-6	Student is able to identify and implement the priorities of his/her own activities and ways to improve them on the basis of self-assessment.	GK-6.1 Student is able plan their life activities for the period of study in an educational organization; GK-6.2 Student is able to determine the tasks of self-development and professional growth, distribute them into long-term and short-term ones with justification of their relevance and determination of the necessary resources.
GPC-1	Student is able to analyze modern problems of science and production, solve complex (non-standard) tasks in professional activities.	GPC-1.1 Student is able to solve complex (non-standard) tasks in professional activities; GPC-1.2 Student is able to analyze modern problems of science and production;
GPC-2	Student is able to impart professional knowledge using modern pedagogical techniques.	GPC-2.1 Capable of transferring professional knowledge, GPC-2.2 Student is able to transfer professional knowledge using information technology.

<b>Competence code</b>	<b>Competence descriptor</b>	<b>Competence formation indicators (within this course)</b>
GPC-3	Student is able to develop and implement new effective technologies in professional activity.	GPC-3.1 Student is able to implement new effective technologies in professional activities; GPC-3.2 Student is able to develop new effective technologies in professional activities.
GPC-4	Student is able to conduct scientific research, analyze results, and prepare reporting documents.	GPC-4.1 Capable of conducting scientific research; GPC-4.2 Student is able to prepare reporting documentation;
GPC-5	Student is able to carry out a feasibility study of projects in professional activities.	GPC-5.1 Student is able to carry out economic feasibility study of projects; GPC-5.2 Student is able to carry out feasibility study of projects.
GPC-6	Student is able to manage teams and organize production processes.	GPC-6.1 Ability to organize production processes; GPC-6.2 Ability to manage the team.
PC-3	Ability to assess the impact of landscape management and use activities in relation to enhancing the quality and safety of the human environment	PC-3.1 Student is able to organise the sustainable management of the improvement site; PC-3.2 Student is able to monitor the condition of the improvement site.
PC-10	Preparedness for the management of landscape architecture sites in terms of their functional use, protection and conservation	PC-10.1 Ability to manage landscape architecture objects in the field of conservation and protection; PC-10.2 Ability to manage landscape architecture facilities.

### 3. COURSE IN HIGHER EDUCATION PROGRAMME STRUCTURE

The course «Phytopathology and Plant Protection» refers to the variable component of (B1) block B1 of the higher educational programme curriculum.

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

<b>Competence code</b>	<b>Competence descriptor</b>	<b>Previous courses/modules, Courses*</b>	<b>Subsequent courses/modules, Courses*</b>
GK-1	Student is able to search, critically analyze problem situations on the basis of a systematic approach, to develop a strategy of action.	Data analysis and statistics; International regulation in city planning and environmental protection; Landscape planning and sustainable development; Green infrastructure urban climate and carbon neutrality; Scientific writing skills; Research planning; Scientific research.	-

<b>Competence code</b>	<b>Competence descriptor</b>	<b>Previous courses/modules, Courses*</b>	<b>Subsequent courses/modules, Courses*</b>
GK-3	Student is able to organize and lead a team, developing a team strategy to achieve the goal.	Data analysis and statistics; International regulation in city planning and environmental protection; Landscape planning and sustainable development; Green infrastructure urban climate and carbon neutrality; Urban ecology; Scientific writing skills; Research planning; Scientific research.	-
GK-4	Student is able to use modern communication technologies in the state language of the Russian Federation and foreign language(s) for academic and professional interaction.	Data analysis and statistics; International regulation in city planning and environmental protection; Landscape planning and sustainable development; Foreign Language; Green infrastructure urban climate and carbon neutrality; Research planning; Scientific research.	-
GK-5	Student is able to analyze and take into account the diversity of cultures in the process of intercultural interaction.	Data analysis and statistics; International regulation in city planning and environmental protection; Landscape planning and sustainable development; Green infrastructure urban climate and carbon neutrality; Scientific writing skills; Research planning; Scientific research.	-
GK-6	Student is able to identify and implement the priorities of his/her own activities and ways to improve them on the basis of self-assessment.	Data analysis and statistics; International regulation in city planning and environmental protection; Landscape planning and sustainable development; Green infrastructure urban climate and carbon	-

Competence code	Competence descriptor	Previous courses/modules, Courses*	Subsequent courses/modules, Courses*
		neutrality; Urban ecology; Scientific writing skills; Research planning; Scientific research.	
GPC-1	Student is able to analyze modern problems of science and production, solve complex(non-standard) tasks in professional activities.	Data analysis and statistics; International regulation in city planning and environmental protection; Landscape planning and sustainable development; Scientific writing skills; Research planning; Scientific research.	-
GPC-2	Student is able to impart professional knowledge using modern pedagogical techniques.	Data analysis and statistics; International regulation in city planning and environmental protection; Landscape planning and sustainable development; Green infrastructure urban climate and carbon neutrality; Scientific writing skills; Research planning; Scientific research.	-
GPC-3	Student is able to develop and implement new effective technologies in professional activity.	Data analysis and statistics; International regulation in city planning and environmental protection; Landscape planning and sustainable development; Urban ecology; Scientific writing skills; Research planning; Scientific research.	-
GPC-4	Student is able to conduct scientific research, analyze results, and prepare reporting documents.	Data analysis and statistics; International regulation in city planning and environmental protection; Landscape planning and sustainable development; Scientific writing skills; Research planning; Scientific research.	-

<b>Competence code</b>	<b>Competence descriptor</b>	<b>Previous courses/modules, Courses*</b>	<b>Subsequent courses/modules, Courses*</b>
GPC-5	Student is able to carry out a feasibility study of projects in professional activities.	Data analysis and statistics; International regulation in city planning and environmental protection; Landscape planning and sustainable development; Scientific writing skills; Research planning; Scientific research.	-
PC-3	Ability to assess the impact of landscape management and use activities in relation to enhancing the quality and safety of the human environment		-
PC-10	Preparedness for the management of landscape architecture sites in terms of their functional use, protection and conservation	Landscape planning and sustainable development; Green infrastructure urban climate and carbon neutrality.	-

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

#### **4. COURSE WORKLOAD**

The total workload of the course is 6 credits (216 academic hours).

#### **5. COURSE CONTENTS**

*Table 5.1. Course contents\**

<b>Modules</b>	<b>Contents (topics, types of practical activities)</b>	<b>Workload, academic hours</b>
Symptoms of plant diseases	Main symptoms on different plant groups. Possible losses from diseases/ Direct and non direct losses	2
Infectious and noninfectious plant diseases	Noninfectious diseases. Environment conditions/ causing plant diseases	3
Mean groups of pathogens	Viruses, viroids, bacteria, fungi. Pathogenesis in different plants	3
Viral diseases	Symptoms, contamination, possible losses, identification	2
Bacterial diseases	Symptoms, contamination, possible losses, identification	2
Fungal diseases	Symptoms, contamination, possible losses, identification	2

<b>Modules</b>	<b>Contents (topics, types of practical activities)</b>	<b>Workload, academic hours</b>
Seeds and planting stock contamination	Identification. Possible losses	2
Main groups of pests	Symptoms of contamination. Possible losses	2
Methods of plant protection. Host plant resistance.	Cultural, physical, chemical, biological means of plant diseases, pests and weed control. Quarantine for pathogensmanagement	2
Cultural control	Preparation of plant material, plant residues, fertilization, plant density	2
Physical method of plant protection	Cooling and freezing. Drying and desiccants. Modified atmospheres	2
Chemical control	Main groups of chemicals. Application forms. Pests, diseasesand weed chemical control	2
Biological control	Biological agents for diseases, pests and weed control	2
Plant quarantine	Main groups of quarantine pests, diseases and weeds. What is quarantine	3
Integrated pest management	Combination of strategies and tactics. Different means of plant protection, combined with each other. Environmentpollution	3
Independent work of students.		162
Control (exam/test with assessment).		20
<b>TOTAL:</b>		<b>216</b>

## **6. COURSE EQUIPMENT AND TECHNOLOGY SUPPORT REQUIREMENTS**

The infrastructure and technical support necessary for the course implementation include: certified soil-ecological laboratory, Laboratory of plant pathology, Laboratory of entomology, Laboratory of virology and plant immunity, individual consultations, routine monitoring and interim certification, equipped with a set of specialized furniture and equipment. (rooms 203, 418). Specialized educational/laboratory equipment includes Draper Diplomat 213x213 83” tripod screen, Microscopes, a workstation based on a complete system unit and a monitor for working with graphical applications. Model AG\_PC Axiom Group/Intel Core I3 Processor 8 Cooperative memory Crucial by Micron DDR4 8SV\*2;Motherboard PRIME B360-PLUS; MoHHTop Samsung 23.5, Software ArchiCAD 15, AutoCAD12, SketchUp, QGIS 2.10 (Quantum GIS).

## **7. RESOURCES RECOMMENDED FOR COURSE**

### a) main literature:

G.Olsen “IPM in Agriculture”, 2009, USA, 358p.

Natural Enemies in Crops and Landscapes. 2006, USA, California, 358p.

### b) supplementary literature:

IPM for Weed Identification in Field Crops, 2007, USA, Michigan University, 107p.

### c) software and databases

[http://bvi.rusf.ru/sista/alf\\_1047.htm](http://bvi.rusf.ru/sista/alf_1047.htm)[www.cnshb.ru](http://www.cnshb.ru)

## 8. ASSESSMENT TOOLKIT AND GRADING SYSTEM\* FOR EVALUATION OF STUDENTS' COMPETENCES LEVEL AS COURSE RESULTS

The assessment toolkit and the grading system\* to evaluate the level of competences (competences in part) formation as the course results are specified in the Appendix to the course syllabus.

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

### DEVELOPERS:

Associate Professor,  
department of landscape  
planning and sustainable  
ecosystems



**V. I. Vasenev**

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position, educational department

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signature

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name and surname.

### HEAD OF EDUCATIONAL DEPARTMENT:

Director, department of  
landscape planning and  
sustainable ecosystems



**E. A. Dovletyarova**

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educational department

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signature

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name and surname.

### HEAD OF HIGHER EDUCATION PROGRAMME:

Associate Professor,  
department of landscape  
planning and sustainable  
ecosystems



**V. I. Vasenev**

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position, educational department

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name and surname