Federal state autonomous educational institution
higher education

" RUSSIAN UNIVERSITY OF FRIENDSHIP OF PEOPLES "
(RUDN)

PROGRAM

Discipline title **Phytopathology and Plant Protection**

Recommended for the educational direction 35.04.09 Landscape architecture,
profile "Management and design of urban green infrastructure"

Graduate qualification (degree) master

1. **Goals and aims of the discipline:**

Goal to obtain basic theoretical knowledge and practical skills in phytopathology and plant protection

Aims

- study of theoretical and practical basis for detection of different plant diseases ;
- study of modern plant protection technology and combinative application of different protective measures;
- fundamental and practical acquisition for pests, diseases and weed control .

2. **Place of the discipline in the educational program:**

Variety part; discipline Phytopathology and plant protection

3. Requirements to the results of the discipline mastering:

Educational process within the discipline is oriented on forming the following competences:

Universal competences:
- Able to search, critical analysis problem situations based on a systematic approach, strategize (UC-1);
- Able to organize and direct work teams, developing a team strategy for achieving the set goal (UC-3).
- Able to apply modern communication technologies in the state language of the Russian Federation and foreign language (s) for academic and professional interaction (UC-4).
- Able to analyze and take into account diversity cultures in the process of intercultural interaction (UC-5).
- Able to identify and implement priorities own activities and ways to improve it self-assessment (UC-6).

General professional competencies (GPC):
- Able to analyze modern problems of science and production, to solve complex (non-standard) tasks in professional activity; (GPC-1);
- Able to analyze modern problems of science and production, to solve complex (non-standard) tasks in professional activity; (GPC-2);
- Able to develop and implement new effective technologies in professional activities; (GPC-3);
- Capable of conducting scientific research, analyze the results and prepare reporting documentation; (GPC-4);
- Able to carry out technical and economic justification of projects in professional activities; (GPC-5);

professional competencies (PC):
- the ability to assess the impact of measures for the rational use and management of landscapes, taking into account the improvement of the quality and safety of the human environment (PC-3):
- readiness to manage objects of landscape architecture in the field of their functional use, protection and protection (PC-10):

In the result of the discipline the master-student shall:

be able to:

- identify mean diseases in ornamental plants;
- understand tendency of pathogens dynamics under various environmental conditions;
- estimate possible losses;
- choose proper means of plant protection and their combination;
- apply in practice knowledge of integrated pest management for different plants.

4. Discipline volume and types of educational activities

General labour-intensiveness of the discipline amounts to 6 ETCS

Educational activity	Total hours	Semesters			
		1	2		
Audience hours (in total)	99	51	48		
Including::	-	-	-	-	-
Lectures	33	17	16		
Practical work (PW)	66	34	32		
Seminars (S)					
Individual work (in total)	117	57	60		
Including:	-	-	-	-	-
Course project (work)					
Independent learning of the discipline topics, working with the lecture materials, textbooks, preparation to test work and colloquium and academic conferences	57	27	30		
Presentation and research work					
Other types of individual work	60	30	30		
Type of examination	Test/ exam				
General labour-intensiveness hours	216	108	108		
ETCS	6	3	3		

5. Content of the discipline

5.1. Content of the discipline sections

№	Section name	Section content
1	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
4	Viral diseases	Symptoms, contamination, possible losses, identification
5	Bacterial diseases	Symptoms, contamination, possible losses, identification
6	Fungal diseases	Symptoms, contamination, possible losses, identification
7	Seeds and planting stock contamination	Identification. Possible losses
8	Main groups of pests	Symptoms of contamination. Possible losses

9	Methods of plant protection. Host plant resistance.	Cultural, physical, chemical, biological means of plant diseases, pests and weed control. Quarantine for pathogens management
10	Cultural control	Preparation of plant material, plant residues, fertilization, plant density
11	Physical method of plant protection	Cooling and freezing. Drying and desicants. Modified atmospheres
12	Chemical control	Main groups of chemicals. Application forms. Pests, diseases and weed chemical control
13	Biological control	Biological agents for diseases, pests and weed control
14	Plant quarantine	Main groups of quarantine pests, diseases and weeds. What is quarantine
15	Integrated pest management	Combination of strategies and tactics. Different means of plant protection, combined with each other. Environment pollution

5.2 Discipline sections and inter-disciplinary relations with provided (subsequent) disciplines

№	Name of the provided (subsequent) discipline	Section numbers of the current discipline, necessary to study provided (subsequent) disciplines													
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	Urban ecology									+	+	+	+	+	+	+
2	Data analysis and statistics									+	+	+	+	+	+	+

5.3. Discipline sections and types of educational activity

№	Name of the discipline section	Lect.	Pract.	Lab.	Sem.	Ind. work	Tot.
1	Symptoms of plant diseases	2	4			7	13
2	Infectious and noninfectious plant diseases	2	4			7	13
3	Mean groups of pathogens	2	4			7	13
4	Viral diseases	2	4			7	13
5	Bacterial diseases	2	4			7	13
6	Fungal diseases	4	4			7	15
7	Seeds and planting stock contamination	1	2			7	10
8	Main groups of pests	2	4			7	13
	Final control	1	3			6	10
9	Methods of plant protection. Host plant resistance.	2	4			7	13
10	Cultural control	2	4			7	13
11	Physical method of plant protection	2	4			7	13

12	Chemical control	2	6			7	15
13	Biological control	2	4			7	13
14	Plant quarantine	2	4			7	13
15	Integrated pest management	2	4			7	13
	Final control	1	3			6	10

6. Laboratory work

№	№ of the discipline section	Name of the laboratory work	Hours
1.			
2.			
…			

7.Practical works (seminars)

№	№ section disciplines	Topic of the practical work (Seminar)	Hours
1	Symptoms of plant diseases	Main symptoms on different plant groups	4
2	Infectious and noninfectious plant diseases	Noninfectious diseases. Symptoms on different plants	4
3	Mean groups of pathogens	Symptoms of viral diseases	4
4	Viral diseases	Viral diseases symptoms	4
5	Bacterial diseases	Symptoms of bacterial diseases	4
6	Fungal diseases	Symptoms of fungal diseases	4
7	Seeds and planting stock contamination	Seed infection. Symptoms, methods of control	2
8	Main groups of pests	Symptoms of pests contamination	4
9	Methods of plant protection. Host plant resistance.	Different methods of plant protection. Host plant resistance.	4
10	Cultural control	Cultural pest, diseases and weed control	4
11	Physical method of plant protection	Physical pest, diseases and weed control	4
12	Chemical control	Main groups of chemicals for pest, diseases and weed control Application forms	6
13	Biological control	Biological pest, diseases and weed control	4
14	Plant quarantine	Quarantine pathogens	4
15	Integrated pest management	Different means of plant protection, combined with each other on various plants	4

8. Preliminary topic for course work

9. Literature and informative support of the discipline

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
www.cnshb.ru

10. Material-technical support of the discipline:

Laboratory of plant pathology;
Laboratory of entomology;
Laboratory of virology and plant immunity;
Herbarium;
Microscopes;
Multimedia class with presentations for different topics:
Computer class with modern programs and internet resources

11. Methodological recommendations on organization and teaching the discipline:

This discipline is aimed at building professional skills in the field of integrated pest management.
The structure of teaching materials makes it possible to combine classes studies and individual learning. The above types of academic activities are aimed at training students’ skills to solve professionally significant challenges. Teaching material, including Word and PowerPoint presentations, explanations, examples be posted on the PFUR on-line learning portal (the teacher ‘s personal web-site). Students are expected to download assignments and meet the deadlines set in the course schedule. The final assignment covers all course components and thus helps consolidate students’ learning activities. Students are required to complete the tasks at home and come to class ready to participate. The student is expected to search for additional thematically important material, use individually selected resources to perform independent work, taking into account the teacher’s recommendations.

Course work / project topics

Development of a project for landscaping the object of landscape architecture (optional).
The concept of the organization includes: general plan diagram with a mark of all applied solutions.
Course work is aimed at the formation of the necessary competencies of the discipline. The student chooses the territory for the project independently.

Criteria for evaluating the course work / project.
1. Course project consists of 2 parts -x:
- explanatory note;
- a set of drawings and visualization.
Course work / project should include
2. Initial data:
- geo-base territory;
- Output:
Explanatory note
Situational plan x1
Scheme of functional zoning of territory x2;
Sketch x2
Master plan x1
Pavement plan x1
Dendrological plan x1 + plants assortment
3D-visualization x2-3

3. Explanatory note with the balance of the territory, assortment list, estimates. Explanatory note should contain the location of the object in terms of the city, with what objects it borders and the features of its location; analysis of the climatic conditions of the area; soil analysis; analysis of water bodies and hydrological conditions; analysis of green space. Search for compositional decisions of landscape-planning organization of the territory should be presented in the form of drawings, sketches in a free scale and are reflected in the text of the explanatory note. The functional zoning of the neighborhood's garden is carried out on the basis of an analysis of the territory being designed and should include walking and rest areas, sports and children's playgrounds. Selection of plant material should include a basic, additional and limited range. Filling assortment sheet is carried out on the basis of a dendrological plan. In the explanatory note, it is necessary to reflect an informed choice of pavements and sites. In the text of the note or in the annexes, structural drawings of the coatings and layouts of paving slabs and paving blocks are given. In the explanatory note it is necessary to present the drawings of the designed LFA, gaming equipment of playgrounds, lamps. For all elements of the greened object, it is necessary to determine the area and their share as a percentage of the total area (balance of the territory).

Each part of the course work / project is evaluated separately. Explanatory note is estimated from 0 to 20 points. A set of drawings and visualization is estimated from 0 to 60 points. Protection of the course work / project is estimated from 0 to 10 points. The maximum mark for completing the course work is 100 points.

No	**Parameters evaluated**	**Score in points**	
		Corresponds to parameters	**Does not match the parameters**
1	The quality of the explanatory note: - the problematic of the issue was analyzed and disclosed, the work is structured, meets the requirements, performed at a high methodological level; - the issue is partially disclosed, the work partially meets the requirements	20 10	0 0

	- The issue is partially disclosed, there are gaps in the methodological and regulatory nature	5	0
2	Quality of the drawings and visualization: - performed at a high methodological level, complies with the standards; - partially completed, the essence of the work is not disclosed enough - partially completed, the essence of the work is not disclosed enough, does not meet the standards	 60 30 15	 0 0 0
3	Job protection: - conclusions on the course work / project fully characterize the work, the protection of the work is competent and structured, fully reflects the problems of the work - conclusions on the work / project are not clear, the protection is not complete, partially reflect the problems of the work	10 5	0 0

Competency matrix:

Course project	CCC-1,2,3; GPC – 1, 2; PC – 2, 3, 4, 5, 7, 13, 16, 20, 21, 22

Compiled by _____ I.V. Mochalov

Department Director _____ E. A. Dovletyarova

Correspondence of assessment systems (previously used estimates of final academic performance, ECTS scores and point-rating system (BRS) of current performance assessments).

BRS points	Traditional RF ratings	Ratings ECTS
95 - 100	5	A
86 - 94		B
69 - 85	4	C
61 - 68	3	D
51 - 60		E
31 - 50	2	Fx
0 - 30		F
51-100	Test	Passed

Explanation of the rating table:
Description of ECTS ratings

A	**"Excellent"** - the theoretical content of the course has been fully mastered , without gaps, the necessary practical skills of working with the mastered material have been formed, all the training tasks provided for by the training program have been fulfilled , the quality of their implementation is estimated by the number of points close to the maximum **.**
B	**"Very good"** - the theoretical content of the course has been fully mastered , without gaps, the necessary practical skills of working with the mastered material are mostly formed, all the training tasks provided for by the training program are completed, the quality of performance of most of them is assessed by the number of points close to the maximum .

C	**"Good"** - the theoretical content of the course is mastered completely , without gaps,some practical skills of working with mastered material are not sufficiently developed , all the training tasks provided by the training program are completed , the quality of performance of none of them is assessed by the minimum number of points, some types of tasks are completed with errors **.**
D	**"Satisfactory"** - the theoretical content of the course is partially mastered, but the gaps are not significant, the necessary practical skills of working with the material mastered are mostly formed, most of the training tasks provided by the training program are completed, some of the tasks performed may contain mistakes.
E	**"Mediocre"** - the theoretical content of the course is partially mastered, some practical skills are not formed, many of the training tasks provided by the training program are not met, or the quality of performance of some of them is estimated by the number of points close to the minimum.
Fx	**"Conditionally unsatisfactory"** - the theoretical content of the course is partially mastered , the necessary practical skills are not formed , most of the training tasks provided by the training program are not met , or the quality of their implementation is assessed by the number of points close to the minimum ; With additional independent work on the course material, it is possible to improve the quality of the performance of educational tasks.
F	**"Certainly unsatisfactory"** - the theoretical content of the course is not mastered, the necessary practical skills of work are not formed, all the completed training tasks contain blunders, additional independent work on the course material will not lead to any significant improvement in the quality of the training tasks.

Positive evaluations, the preparation of which the rate is counted as the learner traversed are estimates A, B, C, D, and E.

FX rated the student on the educational practice of an educational program, after consultation with the appropriate teacher, is obliged to successfully fulfill the required minimum amount of educational work provided for by the program of study, in accordance with the terms established by the educational part, and present the results of this work to this teacher. If the quality of work is found to be satisfactory, then the final assessment of FX is increased to E and the student is allowed to further training.

In the event that the quality of the educational work remains unsatisfactory, the final grade drops to F and the student is submitted for expulsion. In the case of an assessment of F or FX, the student is presented for expulsion regardless of whether he has any other debts in other disciplines.

The program is compiled in accordance with the requirements of OS VO RUDNF / FROS VO.

Authors:

Associate professor	Agrobiotechnological	E.N. Pakina
Position,	Department (chair group)	(family name and initials)

Head of the Department Agrobiotechnological E.N. Pakina