Federal State Autonomous Educational Institution of Higher Education
PEOPLES' FRIENDSHIP UNIVERSITY OF RUSSIA
RUDN University

Agrarian -Technological Institute

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

COURSE SYLLABUS

Forecast of development of agricultural pests and diseases

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:

Integrated Plant Protection

higher education programme profile/specialisation title

2025

1. COURSE GOAL(s)

The purpose of mastering the discipline "Forecast of the development of pests and diseases" is the formation of ideas of theoretical knowledge and the acquisition by students of practical skills and abilities on methods for predicting the appearance and development of pests and diseases of agricultural plants.

The task of studying the discipline is to study:

- the modern structure of the state service for signaling and forecasting of pests and diseases of crops in the Russian Federation;

- theoretical foundations of the emergence and dynamics of the development and spread of harmful organisms;

- approaches to methods for assessing the phytosanitary state of crops and plantations of agricultural crops;

- principles for the development of long-term forecasts of the appearance and development of plant pests and diseases;

- methods of making short-term forecasts of the appearance of the most dangerous pests and diseases.

2. REQUIREMENTS FOR LEARNING OUTCOMES

Mastering the discipline "Forecast of the development of pests and diseases" is aimed at the formation of the following competencies (part of the competencies) among 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-1	Able to carry out search, critical analysis of problem situations on the basis of a systematic approach, to develop an action strategy	GC-1.1 Performs the search for the necessary information, its critical analysis and summarizes the results of the analysis to solve the task
		GC-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
PC-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
PC-4	Able to develop methods of conducting experiments, master new research methods	PC-4.5 Carries out work to protect plants from harmful objects
		PC-4.6 Develops and improves plant protection measures against harmful objects

3.COURSE IN HIGHER EDUCATION PROGRAMME STRUCTURE

The discipline "Forecast of the development of pests and diseases" refers to the part formed by the participants of the educational relations of block B1.B. OP VO.

Within the framework of the OP HE, students also master other disciplines and / or practices that contribute to the achievement of the planned results of the development of the discipline " Forecast of the development of pests and diseases ".

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-1	Able to carry out search, critical analysis of problem situations on the basis of a systematic approach, to develop an action strategy		Scientific research work / Научно-исследовательская работа; Research Practice; Undergraduate practice / Преддипломная практика; Organization of Integrated Plant Protection Systems; Instrumental methods of research; Plant immunity; Biotechnology in Plant Protection;
PC-1	Able to collect, process, analyze and systematize scientific and technical information, domestic and foreign experience in the field of agronomy		Plant Quarantine; Biotechnology in Plant Protection; Organization of Integrated Plant Protection Systems; Plant immunity: Research Practice; Undergraduate practice / Преддипломная практика; Scientific research work / Научно-исследовательская работа;
PC-4	Able to develop methods of conducting experiments, master new research methods		Mathematical Modeling and Design; Biological Method of Plant Protection; Organization of Integrated Plant Protection Systems; Plant immunity; Plant Protection in Organic Farming; Weed biology and management; Virology; Research Practice;

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

4. COURSE WORKLOAD AND ACADEMIC ACTIVITIES

Possible wording

The total labor intensity of the discipline "Forecast of development of agricultural pests and diseases" is 3 credits for full-time education.

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

Type of academic activities	Total academic hours	Semesters/training modules			
		1	2	3	4
Contact academic hours	*34*	*34*			
including:					
Lectures (LC)					
Lab work (LW)					
Seminars (workshops/tutorials) (S)	*34*	*34*			
Self-studies	*59*	*59*			
Evaluation and assessment (exam/passing/failing grade)	*15*	*15*			
Course workload — academic hours_	**108**	**108**			
Course workload — credits	**3**	**3**			

5. COURSE CONTENTS

Table 5.1. Course contents and academic activities types

Course module title	Course module contents (topics)	Academic activities types
Module 1: Introduction. The scientific basis for making forecasts. Types of forecasts	Topic 1.1. Methods of making a short-term forecast of the development of pests of agricultural crops	S
	Topic 1.2. Forecast by the method of establishing the average long-term date of occurrence of the pest	S
Module 2: Phytosanitary monitoring and prognosis of quarantine diseases	Topic 2.1. Using the SCC integral indicator in the forecast	S
	Topic 2.2. Development of long-term forecasts	S
Module 3: Effective heat and its importance in the development and spread of harmful quarantine facilities.	Topic 3.1. Using the date of temperature transition over a certain limit	S
	Topic 3.2. Using the sums of effective temperatures in the forecast	S
	Topic 3.3. Forecasting using the temperature-phenological nomogram of A.S. Podolsky	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)
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.	A set of specialized furniture; technical means: Interactive dashboard with integrated OPS computer Smart SBID-MX265-V2
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. Impacts, Monitoring and Management of Forest Pests and Diseases Publisher-MDPI - Multidisciplinary Digital Publishing Institute Publisher website-www.mdpi.com/books Publication date and place-2020 Classification-Biology, life sciences Pages-198

2. Precision agriculture / E. V. Truflyak, N. Y. Kurchenko, A. A. Tenekov [et al.] ; edited by E. V. Truflyak. — 4th ed., erased. — St. Petersburg : Lan, 2024. — 512 p. — ISBN 978-5-507-49080-6. — Text : electronic // Lan : electronic library system. — URL: https://e.lanbook.com/book/370976

Additional readings:

1. Integrated plant protection in agrophytocenoses : a textbook for universities / V. E. Torikov, O. V. Melnikova, I. V. Sycheva [et al.] ; edited by V. E. Torikov. — St. Petersburg : Lan, 2024. — 180 p. — ISBN 978-5-507-48892-6. — Text : electronic // Lan : electronic library system. — URL: https://e.lanbook.com/book/401012

2. Glukhykh, M. A. Agrometeorology : a textbook for universities / M. A. Glukhykh. — 4th ed., ster. — Saint Petersburg : Lan, 2024. — 200 p. — ISBN 978-5-507-49522-1. — Text : electronic // Lan : electronic library system. — URL: https://e.lanbook.com/book/394616

Internet sources

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) http://lib.rudn.ru/MegaPro/Web
   - EL "University Library Online" http://www.biblioclub.ru
   - EL "Yurayt" http://www.biblio-online.ru
   - EL "Student Consultant" www.studentlibrary.ru
   - EL "Lan" http://e.lanbook.com/

 2.Databases and search engines:
   - electronic foundation 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/

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

The set of lectures on the course «Forecast of development of agricultural pests and diseases»

* 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:

position, department	name and surname

position, department	name and surname

position, department	name and surname

HEAD OF EDUCATIONAL DEPARTMENT:

name of department	name and surname

**HEAD
OF HIGHER EDUCATION PROGRAMME:**

position, department	name and surname