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

WEED BIOLOGY AND MANAGEMENT

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

2026

1. COURSE GOAL(s)

The discipline "Weed Biology and Management" is part of the Master's program "Integrated Plant Protection" under the field of study 35.04.04 "Agronomy" and is studied in the 2nd semester of the 1st year. The discipline is delivered by the Agrobiotechnology Department.

The discipline consists of 8 sections and 16 topics and is aimed at studying methods for assessing the state of agrophytocenoses and techniques for correcting crop cultivation technology in various conditions, taking into account the scientific and practical foundations for assessing and regulating soil fertility, increasing crop yields and the quality of crop products.

The purpose of mastering the discipline is: to form students' skills in possession of a wide range of knowledge on the biology of weeds and measures to combat them.

2. REQUIREMENTS FOR LEARNING OUTCOMES

Mastering the discipline "Weed Biology and Management" is aimed at developing the following competencies (parts of competencies) in students:

Table 2.1. List of competences that students acquire through the course study

Competence code	**Competence descriptor**	**Competence formation indicators** (within this course)
PC-4	Able to create models of crop cultivation technologies, plant protection systems, and varieties	PC-4.5 Carries out plant protection activities against harmful organisms; PC-4.6 Develops and improves measures for plant protection against harmful organisms;

3.COURSE IN HIGHER EDUCATION PROGRAMME STRUCTURE

The discipline "Weed Biology and Management" belongs to the part formed by participants of educational relations of Block 1 "Disciplines (modules)" of the higher education program.

Within the framework of the higher education program, students also master other disciplines and/or practices that contribute to achieving the planned learning outcomes of the discipline "Weed Biology and Management".

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***
PC-4	Able to create models of crop cultivation technologies, plant protection systems, and varieties	Pest Risk Analysis**; Forecast of Development of Agricultural Pests and Diseases**; Nematodes**; Bacterial Diseases;	Mathematical Modeling and Design; Organization of Integrated Plant Protection Systems; Plant immunity; Virology;

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

** – Elective disciplines/practices

4. COURSE WORKLOAD AND ACADEMIC ACTIVITIES

The total labor intensity of the discipline "Weed Biology and Management" is 3 credit units.

*Table 4.1. Types of academic activities during the periods of higher education programme mastering (**full-time training**)**

Type of academic activities		Total academic hours	Semesters/training modules
			2
Contact academic hours		*48*	*48*
including:			
Lectures (LC)		24	24
Lab work (LW)		0	0
Seminars (workshops/tutorials) (S)		24	24
Self-studies		*48*	*48*
Evaluation and assessment (exam/passing/failing grade)		*12*	*12*
Course workload	academic hours	**108**	108
	credits	**3**	3

* To be filled in regarding the higher education programme correspondence training mode.

5. COURSE CONTENTS

Table 5.1. Course contents and academic activities types

Course module title	Course module contents (topics)	Academic activities types
Module 1: The concept of weeds.	Topic 1.1. The division of weeds into groups.	LC, S
Module 2: Biological features and classification of weeds	Topic 2.1. Biological features of weeds.	LC, S
	Topic 2.2. The concepts of "weeds", "weeds" and "weeds".	LC, S
	Topic 2.3. Ecological features of various types of weeds.	LC, S
Module 3: The harmfulness of weeds.	Topic 3.1. The harmfulness of weeds	LC, S
	Topic 3.2. Assessment of the contamination of agricultural crops.	LC, S
Module 4: Weed control measures.	Topic 4.1. The relationship of cultivated and weedy plants in agrophytocenoses.	LC, S
Module 5: Chemical weed control products.	Topic 5.1. The concept of herbicides.	LC, S
	Topic 5.2. The mechanism and causes of the selective action of herbicides on plants.	LC, S
	Topic 5.3. Conditions for the effectiveness of herbicides.	LC, S
Module 6: Terms and methods of application of herbicides:	Topic 6.1. The timing of the use of herbicides.	LC, S
	Topic 6.2. Technological schemes for the use of herbicides	LC, S
Module 7: Biological weed control measures	Topic 7.1. Introduction of crops capable of suppressing certain types of weeds into crop rotation.	LC, S
	Topic 7.2. The use of phytophages.	LC, S

Course module title	Course module contents (topics)	Academic activities types
	Topic 7.3. The use of biosynthesis products of organisms, some bacteria and fungi that are safe for cultivated plants and humans.	LC, S
Module 8:	Topic 8.1. Biological features.	LC, 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)
Lecture	A lecture hall for lecture-type classes, equipped with a set of specialized furniture; board (screen) and technical means of multimedia presentations.	Set of specialized furniture; technical means: EPSON EB-965 multimedia projector, Laptop, internet access available. Software: Microsoft products (OS, office applications package, including MS Office/Office 365, Teams, Skype)
Seminar	A classroom for conducting seminars, group and individual consultations, current and mid-term assessment; equipped with a set of specialized furniture and technical means for multimedia presentations.	Interactive complex – Triumph Board interactive whiteboard with Optoma projector
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. Melnikova, O.V. Weeds in agrophytocenoses and control measures: monograph / O.V. Melnikova, V.E. Torikov. — St. Petersburg: Lan, 2022. — 204 p. — ISBN 978-5-8114-3647-7. — Text: electronic // Lan: electronic library system. — URL: https://e.lanbook.com/book/206756
2. Torikov, V.E. Soil tillage, sowing and planting of field crops: monograph / V.E. Torikov, O.V. Melnikova. — 3rd ed., ster. — St. Petersburg: Lan, 2024. — 244 p. — ISBN 978-5-507-49784-3. — Text: electronic // Lan: electronic library system. — URL: https://e.lanbook.com/book/402932

Additional readings:

1. *Diseases, pests and weeds of potato plants. Diagnostic and accounting methods: A textbook for universities* / V.N. Zeiruk, G.L. Belov, I.N. Gasparyan [et al.]. — St. Petersburg: Lan, 2022. — 256 p. — ISBN 978-5-8114-8281-8. — Text: electronic // Lan: electronic library system. — URL: https://e.lanbook.com/book/187510
2. Savelyev, V.A. *Crop production: A textbook for universities* / V.A. Savelyev. — 3rd ed., ster. — St. Petersburg: Lan, 2021. — 316 p. — ISBN 978-5-8114-8194-1. — Text: electronic // Lan: electronic library system. — URL: https://e.lanbook.com/book/173115

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/
- EL "Znanium": https://znanium.ru/

2.Databases and search engines:

- Sage: https://journals.sagepub.com/
- Springer Nature Link: https://link.springer.com/
- Wiley Journal Database: https://onlinelibrary.wiley.com/
- Scientometric database Lens.org: https://www.lens.org

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

- Lecture course on the discipline "Weed Biology and Management".

* 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.

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