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

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

2025

1. COURSE GOAL(s)

The purpose of mastering the discipline "Weed biology and management" is to form students' skills in mastering a wide range of knowledge on the biology of weeds and measures to combat them; studying methods for assessing the state of agrophytocenoses and methods of correcting the technology of cultivation of crops in various conditions, taking into account the IHR, scientific and practical foundations for assessing and regulating soil fertility, increasing the yield of agricultural crops crops and quality of crop products.

2. REQUIREMENTS FOR LEARNING OUTCOMES

Mastering the discipline "Weed biology and management" 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)
PC-4	Able to create models of crop cultivation technologies, plant protection systems, and varieties	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 "Weed biology and management" refers to the part formed by the participants of educational relations in block 1 "Disciplines (modules)" of the educational program of higher education.

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 "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.

4. COURSE WORKLOAD AND ACADEMIC ACTIVITIES

Possible wording

The total labor intensity of the discipline "Weed biology and management" 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		*48*	*48*			
including:						
Lectures (LC)		24	24			
Lab work (LW)						
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**			

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. Decrease in the quality of plant products as a result of clogging	LC; LW
Module 2: Biological features and classification of weeds	Topic 2.1. Biological features of weeds. Classification of weeds.	LC; LW
	Topic 2.2. The concepts of "weeds", "weeds" and "weeds".	LC; LW
	Topic 2.3. Ecological features of various types of weeds.	LC; LW
Module 3: The harmfulness of weeds.	Topic 3.1. The harmfulness of weeds: a decrease in yield, shading, provoking a lack of moisture in the soil and a decrease in its temperature, the spread of pests and pathogens, etc.	LC; LW
	Topic 3.2. Assessment of the contamination of agricultural crops. Indirect damage caused by weeds.	LC; LW
Module 4: Weed control measures.	Topic 4.1. The relationship of cultivated and weedy plants in agrophytocenoses. Weed control measures	LC; LW
Module 5: Chemical weed control products.	Topic 5.1. The concept of herbicides. Classification of modern herbicides.	LC; LW
	Topic 5.2. The mechanism and causes of the selective action of herbicides on plants.	LC; LW
	Topic 5.3. Conditions for the effectiveness of herbicides.	LC; LW
Module 6: Terms and methods of application of herbicides:	Topic 6.1. The timing of the use of herbicides. Methods of application and treatment with herbicides.	LC; LW

Course module title	Course module contents (topics)	Academic activities types
	Topic 6.2. Technological schemes for the use of herbicides: continuous spraying; local methods of introducing herbicides into the soil; the use of herbicides in the form of foam; the use of herbicides during irrigation.	LC; LW
Module 7: Biological weed control measures	Topic 7.1. Introduction of crops capable of suppressing certain types of weeds into crop rotation.	LC; LW
	Topic 7.2. The use of phytophages. The use of phytopathogenic organisms, as well as viruses that cause diseases of weeds.	LC; LW
	Topic 7.3. The use of biosynthesis products of organisms, some bacteria and fungi that are safe for cultivated plants and humans.	LC; LW
Module 8: Quarantine weeds	Topic 8.1. Biological features. Representatives. Origin. Organization of the quarantine service.	LC; LW

* - 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 Hall	Auditorium for lecture-type classes, equipped with a set of specialized furniture; whiteboard (screen) and technical means of multimedia presentations.	
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.	
Self-studies	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.	

* 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 measures to control them : a 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. Tillage, sowing and planting of field crops : a 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. Plant breeding : A textbook for universities / V. A. Savelyev. — 3rd ed., ster. Saint Petersburg : Lan Publ., 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/

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 «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.

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